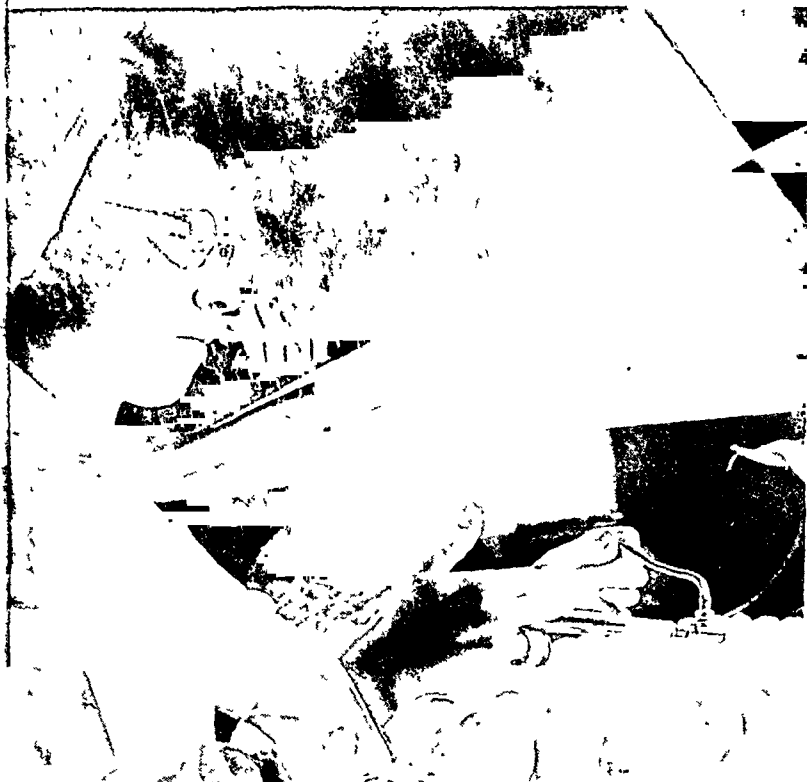


VOL. VII, NO. 1

JANUARY, 1940

AMERICAN PHARMACEUTICAL ASSOCIATION





DR. F. C. T. HILL
S.M.S. MEDICAL COLLEGE

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Journal of the

AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VII, NO. 1

JANUARY, 1946

CONSECUTIVE NO. 1

*Practical
Pharmacy
Edition*

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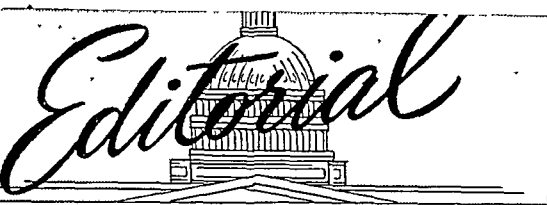
GEORGE A. MOULTON

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COVER: Influenza virus is grown in fertile, incubated hen eggs for production of the new vaccine just licensed for civilian distribution. As shown in the photograph, a laboratory worker inoculates the embryonic fluid with a bit of dilute virus. After further incubation, the virus-laden fluid is harvested for processing (See page 6).

Copyright, 1946, American Pharmaceutical Association



AN ORDERLY RECONVERSION

THOUSANDS of pharmacists happily start the new year back on American soil or scheduled for an early homecoming after years at the battlefronts. Other former GI's are eagerly completing their pharmacy training in our colleges. The aim and ambition of most of them, we hope, is toward closing the ranks of retail pharmacy. Where they will practice comes next in importance to exchanging their rifle for a pestle.

Pharmacy will certainly be negligent in its obligations if we do not see to it that the veteran's professional enthusiasm and ideals are not dampened by re-entering the profession through the wrong door. The recent joint conference of the A. Ph. A. and N. A. R. D. gave a new twist to this objective by proposing that state associations form special committees to act in an advisory capacity to the Veterans' Administration. Representatives of the two national organizations are now conferring with Gen. Bradley to place such committees on a relationship with the Veterans' Administration similar to that of wartime pharmacy advisory committees to Selective Service.

We know of no better way to encourage the 10,000 pharmacist-veterans to return to the profession and to assure that they will get a helpful welcome.

One thing we hope that veterans, and those who advise them, will keep in mind: There are plenty of opportunities for top-notch ability in retail practice, and this does not mean only at Broadway and Fifth Avenue. There is a job to do for the friendly townsfolk at Main and Garden Streets.

Assuming that a pharmacy has a satisfactory potential volume, the Lilly survey has shown time after time that profits percentage-wise will be higher on the average in the smaller communities of less than 20,000 population than in our urban giants. And there is opportunity, too, for prescription practice.

Half the pharmacists reporting from communities of 5000 to 20,000 population filled more than 20 prescriptions per day. Little more than a fourth of us in urban centers hit this figure. Although restricted opportunities for prescrip-

tion practice showed up in the figures for villages under 5000, 41% of these pharmacists filled 10 to 40 prescriptions daily and 4% filled even more than 40.

There is a good bit more data of this kind on potential income that should be brought together and related to local living costs. We would like to see every state association have brass-tack information on local employment and ownership opportunities, and a procedure for permitting the veteran to evaluate them accurately with reference to his own objectives in pharmacy.

A number of states have already made important progress, such as in Illinois where the state association made a survey of the proprietorship of pharmacies and set up a clearing house for information on prospective buyers and sellers of retail pharmacies. This splendid project was adapted from a similar plan developed in Wisconsin by Jennings Murphy, state association secretary.

We, as individual pharmacists, should promote and back such programs and be ready to answer the veteran's queries about today's opportunities with friendly advice, unsoured by wartime difficulties.

UNJUSTIFIED TRADITION

THE discussion of opening and closing hours in retail pharmacy, going on now for some decades, shows signs of evolving into action. Wartime experiments with more reasonable hours, born of personnel shortages, worked out so well that we may at last break with tradition.

There can be no doubt that an unjustifiably long work week looms large in the eyes of prospective pharmacists and returning pharmacist-veterans, especially since pharmacy lags much farther behind other vocations in this respect now than it did a few years ago.

It is time we clarify the issue by admitting that objections to shorter hours are mainly based on dubious economic and competitive considerations. So long as emergency prescription facilities are available, our professional responsibilities no more require fourteen to sixteen hours seven days per week for adequate service than do those of other public health professions.

Local associations initiating cooperative observance of reasonably shorter hours are to be commended. Pharmacists have well earned this extra bit of time with family and friends.

A. PH. A. — A SOUND RALLYING POINT

Sirs:

November's issue of the JOURNAL was as bountiful as ever in timely facts and information. Certainly the A. PH. A. staff is to be congratulated for the remarkable improvement in this mouthpiece of our profession.

I read with interest the editorial by Dr. Fischel on the release of pharmacists from the service, and have applied for release under the provisions of W. D. Circular 290, Section III. I have learned, however, that my application has slight chance of approval in Washington despite the fact that I work but five to ten days per month... whereas my former employers, the Gorman-Noble Drug Co. of Hackensack, N. J., are in dire need of my services. They have been forced to enlarge their prescription department as a result of a large increase in their professional services...

If there is one thing that I have learned in service, it is the need for a unified front in pharmacy to maintain our professional prestige, and I look to your organization as a sound rallying point.

Staten Island, N. Y.

RICHARD C. BOZIAN

FEWER PHARMACISTS NOT HARMFUL

Sirs:

I cannot believe that the decreasing number of pharmacists and pharmacies is harmful to the public health. At the present time, in too many communities, there is still a drugstore on every other corner. They often fill as low as 2 to 5 prescriptions daily and cause unreasonably severe competition.

There have always been too many pharmacists and pharmacies, due to former low standards. It is not necessary to lower the present standards of training to attract capable students, but it is necessary to improve working conditions and salaries and shorten the hours of operation. Let's also remember that in wartime college enrollments always drop by half...

San Francisco

SAMUEL J. COHEN, U.S.N.R.

FINE TO BE BACK IN PHARMACY

Sirs:

I have received my honorable discharge from the Army of the United States under AR 615-365, paragraph 3b. I want to thank you very much for the kind letter you sent in my behalf, for it is my sincere belief that a letter from your organization carries a lot of weight in such a matter... Discharge depends largely on one's camp. The case must be a strong one and meet with several approvals.

It is fine to be back in pharmacy and I assure you that there are plenty of prescriptions to be filled...

Ashland, Va.

E. G. MATEER, JR.

APPRECIATION

Sirs:

Many thanks for the attention given to my membership in the AMERICAN PHARMACEUTICAL ASSOCIATION. It is an honor that I shall long enjoy.

May I at this time also tell you how much I enjoyed reading the *Practical Pharmacy Edition*. The article on streptomycin was swell; neither too dry nor technical—just as the name of the book implies, practical.

Can you please let me know when I may expect

the *Scientific Edition* of the JOURNAL?...

New York, N. Y.

GERARD J. MONA

MASKING TASTE OF CHLORAL HYDRATE

Sirs:

May I add to your suggestions in the JOURNAL regarding masking the taste of chloral hydrate, that I have found aromatic syrup of eriodictyon N. F. to be the perfect vehicle...

Washington, D. C.

JOHN S. AUSTERLITZ

Sirs:

If you wish to make any additional comment concerning chloral hydrate, I should like to point out that syrup of acacia N. F. is one of the finest vehicles as far as coverage is concerned. This is not so much a case of flavoring, but is due to the colloidal nature of acacia which helps to cover and protect the chloral to the point where it is very well masked...

Philadelphia, Pa.

ADLEY B. NICHOLS

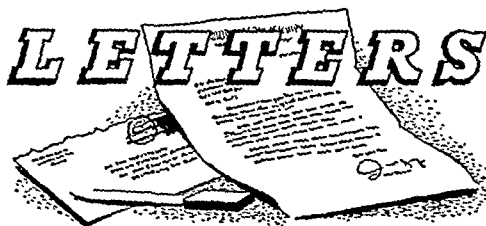
HISTORY OF PHARMACY

Sirs:

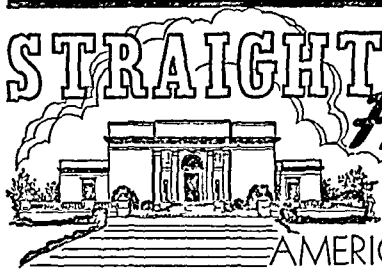
How and where may I obtain information on the history of pharmacy?...

Pittsburgh, Pa. SISTER MARY KEVIN COUGHLIN

Write to Dr. George Urdang, director of the American Institute of the History of Pharmacy, University of Wisconsin, Madison, Wis. One of the best volumes on the subject is "History of Pharmacy" by Kremers and Urdang (J. B. Lippincott Co., Philadelphia; \$4.50). An earlier work is LaVall's "Four Thousand Years of Pharmacy," available from the same publisher.—THE EDITOR.



STRAIGHT



FROM HEADQUARTERS

by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

FOR the first time since 1941 we begin a new year without having our nation actively at war. Although the clouds of war had gathered long before 1941 and we had taken definite sides in the world-wide struggle which was under way, we did not have a full realization of what it meant to have men and women leaving their peacetime employment and concentrating on war production and actually fighting in the various war theaters, until long after December 7, 1941. The stirring events and the bloodshed of the past four years have left their mark on the American economy, on the American home, and on the American way of life.

Although the war is over, in so far as actual fighting at the fronts is concerned, any student of the present situation is well aware of the fact that the issues over which the war was fought and the bases on which the nations of the world are to continue in their respective spheres are far from settled. There are grave and intricate problems to be solved, and in many ways we are not prepared for the solutions which must ultimately come.

A glance about us in our own communities, in our states and toward the national picture reveals anything but harmonious or even relatively complete understanding.

Many of our people are tired, fatigued and worn out. Returning soldiers are tired of army or navy routine. Many are anxious to resume civilian activities and ambitious to make up for time lost on the fighting fronts, but nevertheless feel the need of rest and recreation before going back to civilian work.

War workers, skilled and unskilled, who have worked long hours and taken home bulging pay envelopes cannot be made to feel that there is need for the same concentrated effort which made our production miracles possible. They also feel the need of rest and recreation before going on to something else.

The epidemic of strikes and labor unrest are significant of the let-down which is bound to

come after years of spurred action. But this is not a normal situation for the people of the United States. It is a situation which is fraught with danger and significant of changes that are to come. It will probably take some time before most people will realize that there must be a readjustment of work programs, wages, and ways of living.

Markets for consumer goods and services, for housing, for means of transportation, and for recreation are growing and it will take considerable time to satisfy them. The prime wants of the people—food, shelter and clothing—must be met. Along with these comes the inevitable requirement for medical care. People have learned much about what constitutes good medical care during the war years. Those who have been in the military service have had the best that could be supplied. War workers have become accustomed to receiving special attention through industrial health services. The average family in the United States has learned to get along with reduced service from physicians because the number of doctors available had to be prorated on a much higher average of patients per physician than was the case before the war, because almost one-third of the practicing physicians were on military duty.

The President of the United States has taken cognizance of many of the situations here referred to; he has offered to Congress a series of suggestions with respect to the settlement of labor disputes, the control of scientific advances in the field of atomic energy, the housing situation, and he has now made suggestions with respect to the distribution of medical care to all of the people.

He has referred to his various recommendations as an economic bill of rights for the American people, and specifically to the health program as "the right to adequate medical care and the opportunities to achieve and enjoy good health."

His analysis of the present situation in the following words is worth noting:

"In the past, the benefits of modern medical science have not been enjoyed by our citizens with any degree of equality. Nor are they today. Nor will they be in the future—unless government is bold enough to do something about it. People with low or moderate incomes do not get the same medical attention as those with high incomes. The poor have more sickness, but they get less medical care. People who live in rural areas do not get the same amount or quality of medical attention as those who live in our cities. Our new economic bill of rights should mean health security for all, regardless of residence, station or race—everywhere in the United States. We should resolve now that the health of this nation is a national concern; that financial barriers in the way of attaining health shall be removed; that the health of all its citizens deserves the help of all the nation."

Truman's Health Program

The President's proposed program consists of five parts, as follows: (1) Federal financial and other assistance to the states for the construction of needed hospitals, health centers, and other medical, health and rehabilitation facilities. (2) Increased Federal grants to the states for an expansion of public health, maternal and child health services. (3) Federal grants to public and nonprofit private institutions for medical research and professional education in medical and related fields. (4) Expansion of the Federal compulsory social insurance system for prepaid medical care to the masses. (5) Federal protection against loss of wages from sickness or disability. The financing of this program is left to Congress, as to method and amount.

To implement the President's proposal Senator Wagner and Representative Dingell have introduced bills which now supersede the "Wagner-Murray-Dingell Bills" which have been before the Congress for some time, but which have never been made the subject of public hearings.

It is now a certainty that public hearings will be held and medical, dental, pharmaceutical, hospital, nursing and other organizations engaged in supplying medical care will be expected to make their contribution either in favor of the acceptance of the program proposed, or in supplying such modifications as will implement the proposals in a practical manner, and with due regard for the interests of the professions concerned and the people whom they must eventually serve.

Drugs and medicines have so far not been in-

cluded in proposed Federal compulsory health insurance programs. There are those who have advocated the inclusion of such services and supplies. As long as proposed legislation does not mention these supplies and services it can be assumed that they will continue to be supplied privately.

A study of various state proposals for supplying complete medical care indicates that there is a growing tendency to include medical and health supplies and pharmaceutical services. Organized pharmacy has laid the groundwork for a study of this situation through the appointment of a joint committee of the AMERICAN PHARMACEUTICAL ASSOCIATION and the National Association of Retail Druggists, which made a preliminary report to the Joint Conference of the executive bodies of these two organizations on November 9.

It is to be expected that when serious consideration is given by the Congress to a complete health program which will include the supply of drugs, medicines and pharmaceutical services, organized pharmacy will make its findings on the subject available, and endeavor to safeguard the personal relations between those who need drugs and medical supplies and those who are licensed to supply them.



BOARD DECRIES SIDE LINES UNRELATED TO PHARMACY

Disapproval of the trend in some pharmacies and drugstores to expand into lines of endeavor unrelated to the practice of pharmacy was recorded by the New Jersey Board of Pharmacy at its November meeting.

In the Board's opinion the legislature only granted it authority to issue permits for the operation of drugstores and pharmacies to persons deemed qualified.

The Board deplored the fact that, in some instances, permits are being used as a cloak to carry on unrelated merchandising activities.

Consequently, the Board announced that each application for a permit to conduct a pharmacy or drugstore in New Jersey will be thoroughly investigated and if, in the Board's opinion, the proposed establishment is not a pharmacy or drugstore as contemplated in the statutes the permit may be denied.



AFTER INOCULATION and incubation of the eggs (see front cover), the shell is scissored off over the natural air sac (left) and the membranes and blood vessels ruptured. Blood and virus-laden fluid are then aspirated into a chilled bottle, as shown on the following page.

INFLUENZA VIRUS VACCINE, A AND B

THIS NEW PREVENTIVE AGENT SOON WILL BE AVAILABLE IN RETAIL AND HOSPITAL PHARMACIES; HERE IS THE ESSENTIAL INFORMATION YOU NEED

INFLUENZA vaccine will soon be available through retail and hospital pharmacies for general use by civilian physicians. The National Institute of Health of the U. S. Public Health Service has granted the first licenses for civilian production, and other biological laboratories may be expected to file applications in the near future.

Firms preparing the vaccine for the armed forces can now turn toward civilian production, since the Army completed the vaccination of all personnel early in December. Use of the influenza vaccine in the Army resulted from controlled clinical trials sponsored by the Office of the Surgeon General. These and other investigations show that a significant number of the persons vaccinated are protected against influenza during outbreaks which occur soon after vaccination.

Thus an important step may have been taken toward a means of controlling an ancient disease, the etiology of which has only recently been clarified. It was little more than a decade ago, in 1933, that the British workers, Smith,

Andrewes and Laidlaw, established that influenza was caused by a virus. This virus is now known as influenza A virus.

While the work of Smith and his colleagues was confirmed, epidemics of the same disease occurred with which influenza A virus could not be identified. By 1940 Francis had reported the discovery of still another strain of virus, known as influenza B, which can cause the disease; and there may be others.

During the great pandemic of 1917-18 our knowledge of influenza was so incomplete that there are no records to indicate whether it was due to virus A or B or to some other type. The new vaccine is a mixture of types A and B, those known to have caused epidemics in recent years. But there is no way authorities can predict whether or not the vaccine would be an effective aid in combating the virulent, fast-spreading infections such as occurred at the close of the first world war.

Although strains of the virus may differ, Dr. Thomas Francis, Jr., an authority on influenza, has pointed out that when an effective method of producing immunity against any one strain is established the rest will follow.

Early Experiments

Following the isolation of an influenza virus, a number of attempts were made to produce active immunity in animals by inoculation with sus-

pensions of killed or attenuated organisms. Early reports began to appear about eight years ago on vaccination experiments with virus propagated in mouse lungs. Results were generally conceded to be conflicting and inconclusive.

Further work showed that the virus could be grown in the allantoic fluid of embryonated hen eggs. From this virus-containing liquid, preparation of a killed virus vaccine later became possible.

It was demonstrated that vaccine from this source could prevent active infection in laboratory mice which were inoculated intranasally with living virus. Mice protected against virus A did not, however, resist infection with virus B. Obviously both strains would be needed to produce a satisfactory vaccine.

Following successful experiments with B vaccine, and later with a combination of the two strains, trials were cautiously extended to humans. After vaccination, investigators were able to demonstrate immune bodies in the blood. Moreover, the antibody titer was in the same range level as that following an attack of influenza.

On the basis of these encouraging results from carefully controlled experiments, the Army's Commission on Influenza* felt justified in undertaking a more extensive clinical evaluation of the vaccine.

The trial was carried out in Army Specialized Training Program units of eight universities in different parts of the United States and in a ninth group comprising the members of units in five New York medical and dental colleges. The influence of subcutaneous inoculation of the vaccine was determined during an outbreak of influenza A.

Vaccination shortly before or even after the onset of the epidemic exerted a protective effect. A total attack rate of 2.22% was recorded among the 6263 vaccinated and 7.11% among 6211 controls. The ratio of incidence between the vaccinated and control groups was thus 1 to 3.2.

Meanwhile, immunization data holding similar promise became available from other investigators.

Preparation of the Vaccine

Vaccine for the Army has been made by the chick red-cell adsorption method outlined below. First, a bit of highly diluted solution of virus is inoculated into the allantoic sac surrounding the embryo in hen's eggs that have been incubated for eleven or twelve days.

(The PR8 and Weiss strains of influenza A and the Lee strain of influenza B are used in the vaccine, each of the three virus strains being grown separately in different eggs.)

After about forty-eight hours of additional incubation the extra-embryonic fluids are ready for harvesting. The shell over the normal air sac is removed, then the shell and chorio-allantoic membranes and amnion, together with the blood vessels, are torn with sterile forceps.

When the embryo has bled into the fluid containing the virus, this liquid is aspirated with a needle, collected in a bottle, and immersed in an ice bath. Red blood cells from the embryo rapidly adsorb the influenza virus from the extra-embryonic fluid.

By centrifugation the virus-laden red cells are separated, and the supernatant fluid discarded. Next, the soft, gelatinlike mass of red cells is gently rinsed with physiological salt solution.

Elution with physiological salt solution at 37°C. then separates the virus from the blood cells.



* The Commission functioned under the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, Preventive Medicine Service, Office of the Surgeon General, U. S. Army.



NORMAL SALINE is added (left) to the red blood cells which have adsorbed the virus in the embryonic fluid obtained from inoculated eggs, as shown on the preceding pages.

The blood cells are removed and the virus suspension inactivated by a weak solution of formaldehyde. A bacteriostatic agent, such as phenyl mercuric borate 1:15,000, is added to the concentrated vaccine.

The final preparation, usually slightly opalescent with a faint pink tinge, undergoes tests for sterility, antigenic activity and absence of infectious capacity.

Both manufacturing and independent laboratories have been experimenting with possible improvements on the above procedure. Perhaps most significant has been the observation that the virus can be adsorbed on calcium phosphate. This modification promises several advantages over blood-cell adsorption, including higher antigenicity of the vaccine and lower production costs. Another change expected for civilian production is the use of ultraviolet radiation, instead of formaldehyde solution, to kill the influenza virus.

Composition of Vaccine

The vaccine, called "Influenza Virus Vaccine, Types A and B (Refined and Concentrated)," contains a mixture of the two virus types. The two components represent concentrates of equal quantities of extra-embryonic fluid obtained from the eggs.

The type A component consists of equal

amounts of the PR8 strain and the Weiss strain. The type B component consists of the Lee strain.

Storage

Like other biologicals, influenza vaccine must be stored in the pharmacist's refrigerator between 2 and 10° C., preferably at the lower limit. The vaccine will carry a dating period of one year from the time of manufacture.

It is hoped that improved manufacturing techniques will eventually assure retention of potency over a longer period of time, so that a longer dating period may be specified.

Dosage

The present vaccine concentrate is designed to be given as a single subcutaneous injection of 1 cc. The effect of the vaccine apparently becomes evident in about one week or so after inoculation. There seems to be no evidence at present that a second injection has any significant additive effect to the antibody response produced by a single injection.

Just how long any immunity established remains effective is not yet known. Francis, Salk and their colleagues were of the opinion that a protective influence against induced infections of influenza B was exerted for at least one to four

CRUDE VIRUS remains in the normal saline solution after it has been separated from the red blood cells by elution. A laboratory worker is shown (right) drawing off the crude virus after centrifuging to get rid of blood cells. The photographs on these pages were taken in the laboratories of Sharp and Dohme, one of the producers of influenza vaccine.



months; similar studies on the incidence of influenza A indicated, however, that effective immunity to this type may be considerably reduced after an interval of four months. Hirst and others have expressed the opinion that protection against influenza A may last somewhat longer, judged by antibody levels.

Results so far indicate that the influenza vaccine described significantly increases active immunity by stimulating production of antibodies

against specified types of virus. Laboratory data are confirmed by limited clinical experience indicating that the vaccine also significantly reduces incidence of the disease.

Vaccination of all Army personnel, just completed, and use of the vaccine in civilian medical practice in the near future, should provide authorities with additional information needed to evaluate fully the role of this new agent in preventive medicine and pharmacy.

INCIDENCE OF RESPIRATORY ILLS STUDIED

UPPER respiratory infections as an important cause of incapacitating manpower prompted Lt. W. H. Harris, Jr. (M. C.) U. S. N., to study the incidence of these diseases aboard a destroyer. (*Ann. Int. Med.*, 23:147, 1945). Outside contacts were apparently the most important factor in bringing about an outbreak of infections.

Without such contacts, upper respiratory infections tended to diminish to an extremely low level within two or three weeks. "This seems important," says Lt. Harris, "since if such can happen in a small 'community' (personnel of destroyer), it can possibly be brought about ashore in larger communities."

Long-continued fatigue, irregular dietary and

bowel habits, impaired sanitation measures and exposure to rains, all seemed to be without effect in bringing about an increased incidence of infections in the absence of contacts.

Although no severe climatic changes were encountered, gradual changes of this nature apparently have little or no influence.

Since active infections fell to a minimum and remained low after the ship had been at sea for two weeks or so during its voyages, "carriers" among the ship's own personnel were apparently of no significance.

These observations, Lt. Harris concludes, confirm that control of this important group of diseases seems to lie in the control of "contacts."

THE NEXT STEP IN PHARMACY'S FIGHT AGAINST VD

by KENNETH R. MILLER*

AMERICAN SOCIAL HYGIENE ASSOCIATION

PHARMACY will continue to cooperate with other public health groups during the coming year in combating venereal disease by extending the program of the Joint Committee of the AMERICAN PHARMACEUTICAL ASSOCIATION and American Social Hygiene Association. From a small beginning five years ago, this cooperative project has grown until in 1945 more than 6000 pharmacists in 20 states used the Committee's special display cards and distributed the leaflet, "A Tip from Your Pharmacist."

In some communities a single pharmacist contacted the Committee; in others, the local or state pharmaceutical association aided the state health department or social hygiene society in working out distribution to every pharmacy in the state. It was a big job—well done.

In the months ahead every American community must face the social hygiene education job again. This time we must do even better than in the past. For it is a well-known fact that the venereal diseases tend to spread even more rapidly *after* a war than during it.

It was relatively easy during the war to put extraordinary efforts into venereal disease control

NEW LEAFLETS AND DISPLAY CARD
MADE AVAILABLE TO PHARMACISTS
AS A. PH. A.'S POSTWAR PROGRAM
WITH SOCIAL HYGIENE ASSOCIATION
IS PLANNED BY JOINT COMMITTEE

measures and gain public cooperation. Most persons recognized that the fighting and working ability of the armed forces and industrial personnel was dependent on it. Now we shall have to fight not only the diseases but the tendency to forget, to relax, to do things the easy way. Now is the time to combat the conditions which contribute to the spread of gonorrhea and syphilis: ignorance, sexual promiscuity and prostitution.

Hence the need for much greater numbers of pharmacists in the national venereal disease educational program. The joint program of the AMERICAN PHARMACEUTICAL ASSOCIATION and the American Social Hygiene Association has again illustrated the power and effectiveness of pharmacy participation in such health education. Pharmacists have participated not only because it is a natural function of the profession, but because it is a simple way to emphasize to their communities the role of pharmacy in public health programs.

The high point in the 1946 program will be during the month of February, with February 6

* Director, Public Information Service.



BEYOND VICTORY

Build
BETTER HEALTH
BETTER HOMES
BETTER COMMUNITIES

Prevent
VENEREAL DISEASES
PROMISCUITY
PROSTITUTION

NATIONAL SOCIAL HYGIENE DAY

ISSUED BY THE JOINT COMMITTEE OF THE AMERICAN PHARMACEUTICAL ASSOCIATION AND THE AMERICAN SOCIAL HYGIENE ASSOCIATION INC. IN COOPERATION WITH STATE AND LOCAL HEALTH DEPARTMENTS

THE COUNTER CARD, illustrated at the left, is available to all pharmacists without charge. PAMPHLETS on venereal disease (see next page), supplied by A. Ph. A.'s joint committee, emphasize the pharmacist's role in this health work.

set aside as Social Hygiene Day, when pharmacy and other professional and lay groups make a coordinated effort to bring venereal disease information to the public.

A new display card in three colors, 14 by 11 inches in size, has been prepared by the A. P. H. A.—A. S. H. A. committee as illustrated on page 10. We hope that every pharmacist will accept a copy of this counter card for use during February and at other times during the year. The card may also be used as a part of professional window displays. For your free copy send a postcard request to the Joint Committee of the AMERICAN PHARMACEUTICAL ASSOCIATION and American Social Hygiene Association, 1790 Broadway, New York 19, N. Y. "At cost" prices will be quoted for larger quantities.

For use in conjunction with the VD counter card, or separately, the Joint Committee has just prepared a new leaflet especially designed for distribution by pharmacists. Entitled "Here's What You Should Know About Venereal Disease," this publication will replace "A Tip from Your Pharmacist," of which nearly a million copies were distributed.

It contains up-to-the-minute facts on gonorrhea and syphilis, their treatment and prevention, printed as a six-page folder 3½ by 5½



(Continued next page)

-----CLIP THIS COUPON-----

Joint Committee of the American Pharmaceutical Association
and the American Social Hygiene Association
1790 Broadway, New York 19, N. Y.

I wish to participate in the educational campaign for controlling and preventing the venereal diseases. Please send me the material checked below:

☐ A special display card for my pharmacy without charge. ☐ Quote prices on an additional _____ counter cards.

☐ One hundred copies of the pharmacy leaflet, "Here's What You Should Know About Venereal Disease," without charge. ☐ I would also like _____ thousand leaflets at \$5 per thousand.

☐ Material on VD control suitable for an address before a civic club.

Name _____

Street and Number _____

City and State _____

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inches in size. Just send a request to the Joint Committee at 1790 Broadway, New York 19, for 100 free copies for counter distribution. Larger quantities may be obtained at \$5 per thousand.

In many areas, state and local health departments and social hygiene societies are purchasing and distributing display cards and leaflets through a cooperative arrangement with local and state pharmaceutical organizations. Officers of pharmaceutical groups should contact social hygiene or health department officials locally to see if such distribution has been or can be planned in a particular area.

The pharmacist has an important role in building the better health, better homes and better communities which this nation needs. Join with your state and national associations to meet the important postwar health menace of venereal disease. Here are the ways you can participate:

1. Cooperate individually and through your professional organizations with municipal authorities whenever either legal or voluntary programs are proposed for controlling and preventing venereal diseases, prostitution and promiscuity.

2. Guide infected persons to competent medical treatment and discourage attempts at self-treatment at every opportunity. The Committee's leaflets are helpful in this regard.

3. Address lay groups in your community on social hygiene problems, or arrange to have a representative of the social hygiene society or health department in your area deliver such an address. Material and suggestions may be obtained from the A. Ph. A.—A. S. H. A. committee at 1790 Broadway, New York 19.

4. Display the VD counter card designed especially for pharmacies.

5. Distribute the leaflet, "Here's What You Should Know About Venereal Disease."

EFFECTIVE ANTIDOTE FOUND FOR ARSENIC

MORE than 200 patients poisoned by arsenic in the course of treatment for syphilis have been saved in this country by 2,3-dithio-propanol, first developed by British scientists and made even more widely useful through research in this country, according to a report by Science Service.

There is hope that the same saving of lives may be accomplished in cases of mercury poisoning, such as occurs in use of bichloride of mercury in suicide attempts.

A closely guarded secret during the war, this alcohol has been known only as BAL (British anti-lewisite). Its identity is now revealed by the biochemist whose twenty or more years of painstaking research between two wars resulted in its development. This is Prof. R. A. Peters of Oxford University. His report in the English scientific publication, *Nature*, will be followed shortly by reports in this country of the work of American scientists during the war.

BAL, the anti-arsenic chemical, was developed for use in local decontamination of the skin after lewisite poisoning. Lewisite, war gas developed by an American scientist, is an arsenic-containing chemical.

When the British shared the secret of BAL with American military and scientific authorities, scientists in the United States first confirmed the British findings and then developed a practical ointment for use on the skin and in the

eyes in case of lewisite poisoning. This was necessary because BAL itself is very unstable in aqueous solution.

The very specific nature of the alcohol's action on arsenic in the skin suggested that it might be useful in cases in which arsenic had reached other tissues in the body, for example, in patients suffering toxic reactions from arsenicals.

American scientists next devised an injection of the alcohol, using peanut oil and benzyl benzoate as the vehicle.

Ampuls of this form of BAL were distributed to all rapid treatment centers of the U. S. Public Health Service, where syphilis patients were getting large doses of arsenicals. From these centers, records of more than 200 cases treated with BAL show that it is effective in counter-acting arsenic poisoning. Instances of failures were believed due to insufficient dosage or too late administration.

BAL's action is much more than that of an antidote. It actually removes the poison from the tissues by forming a compound with the arsenic which the body can excrete.

BAL itself is toxic but can be safely used by observing proper precautions regarding dosage. It has been distributed to physicians in this country for clinical investigation. Manufacture for civilian distribution is planned but the chemical may not be available for at least several months.

Amino Acid Mixtures

NEW PREPARATIONS THAT CAN
REPLACE WHOLE PROTEIN FOOD
IN NUTRITIONAL THERAPY ARE
DISCUSSED BY AN AUTHORITY

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THE pharmaceutical profession has extended its frontiers greatly during the past few decades. One such advance has been the production and dispensing of many preparations for nutritional purposes. With recent progress in the science of nutrition, food is no longer taken for granted but is actually used as a specific therapeutic measure in the treatment of disease. The physician can no longer view with complacency malnutrition which frequently develops in patients unless specific measures are taken to prevent it.

The purification of the many food substances has facilitated greatly nutritional therapy. It has even led to the preparation of solutions which permit injection of an almost complete diet in patients unable to eat. The most recent addition to the group of purified nutritional substances is the use of an amino acid mixture as a source of protein food.

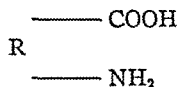
Individual amino acids have also been recommended for specific therapeutic uses, but these studies are still so incomplete that no definite statement can be made as to their value. In this paper only mixtures of amino acids will be discussed, mixtures which may be used instead of whole protein food to prevent or correct protein deficiencies in various conditions in which whole protein food cannot or should not be employed.

General Considerations

Amino acids are to protein what glucose is to starch. In other words, they are the unit components of food and tissue protein. Their discovery, purification and identification mark one

of the milestones in the development of the science of nutrition. The isolation from foods of these specific chemical components which enter into the metabolic activities of the body represents the most important recent contribution of chemistry to the field of nutrition.

Amino acids differ from vitamins in that they are more than catalysts or enzymes; they actually enter into the structure of body tissue. While they are thus used up like glucose, unlike the latter they are not burned as fuel unless calorogenic elements are absent, when they may act for glucose when the latter is not available. They are also unlike other purified food essentials because there so many of them. The glucose molecule represents the form in which carbohydrate is utilized; the vitamin B complex has been divided into a number of different crystalline substances. On the other hand, amino acids are twenty-one or more in number, each different, though conforming to the same general chemical formula in that they contain an amino group and a carboxyl group.



Consideration, therefore, of the amino acids as the structural units of food protein leads immediately to an enumeration of these various amino acids in Table 1. Most important is the fact that but ten of them may be considered as "essential." These essential amino acids are also termed indispensable in that the body is unable to manufacture them from other amino acids or from simpler material and that they must be supplied before normal protein metabolism

TABLE 1.—THE VARIOUS AMINO ACIDS IN PROTEIN

INDISPENSABLE	DISPENSABLE
Lysine	Aminoacetic acid
Tryptophan	Alanine
Histidine	Serine
Phenylalanine	Norleucine
Leucine	Aspartic acid
Isoleucine	Glutamic acid
Threonine	Hydroxyglutamic acid
Methionine	Proline
Valine	Hydroxyproline
Arginine	Tyrosine
	Cystine

can occur. For example, normal growth will take place if these essential amino acids are fed to growing rats as the sole source of protein in the diet. Yet if one of them is omitted, normal growth is not obtained. In this sense certain of the individual amino acids assume an importance comparable with the vitamins in maintaining normal nutrition and life processes. Much of the recent investigation regarding the nutritive significance of the amino acids has been carried out and described by W. C. Rose.¹

Further consideration of amino acids reveals the fact that each protein in the body as well as each protein in food has its own individual amino acid composition (Table 2). Thus transfers from one protein to another may be conceived as requiring a breakdown of the protein molecule into its individual amino acids with the re-assembling of them to form another protein.

This general procedure is the normal method by which food protein is transformed into tissue protein—hydrolysis or digestion occurs in the gastrointestinal tract; the resulting amino acids are absorbed into the portal system and the synthesis of these building stones then takes place in the liver and other tissues. It is probable that extra-alimentary transfers also require a similar mechanism as, for example, the use of tissue protein in the synthesis of new serum protein after its loss in a hemorrhage. Other types of interchange between protein molecules also occur as shown, for example, by the recent studies of Schoenheimer.²

The important conception to emphasize from these new studies on protein metabolism is one of dynamic rather than static equilibrium. In other words, protein is constantly undergoing rapid and perhaps profound changes of many

kinds. The concept of great masses of inactive protein stores must be abandoned—all protein tissue is in a constant state of chemical activity.

By using amino acids instead of food protein the physician can administer protein nourishment in its simplest form just as he uses glucose. With parenteral administration he does not have to depend on digestion and absorption by the gastrointestinal tract. In this way protein starvation can be avoided even though these two functions are completely impaired. Even if the patient requires parenteral fluids, these need no longer be confined to salts or glucose; protein-building substances can now be just as easily supplied. Amino acids may also be administered orally for the maintenance of proper nutrition in certain special conditions, as will be described.

Sources of Amino Acids

Like chemically pure glucose and vitamins, amino acids are available in crystalline form and may be purchased as such. They may then be combined in the desired proportions and given to the patient either by mouth or by injection just as in the case of crystalline vitamins or glucose. The greatest drawback to this is the cost. The large amount of protein nourishment needed makes the use of crystalline amino acids unpractical at the present time, although it may be that in the future chemical methods will be devised whereby crystalline amino acids may be cheap enough to permit their general use.

Another objection to crystalline amino acids is the fact that, in preparing some of them racemic mixtures are obtained containing both the natural and unnatural isomers, which are difficult to separate. All natural proteins contain only the natural isomers, although in the case of some amino acids the two forms are equally utilized. The suggestion of Albanese³ that the unnatural form may in some cases be deleterious is an important consideration which needs further investigation.

By adequate digestion *in vitro* of natural proteins a mixture of amino acids may be easily obtained. These procedures are essentially similar to those by which the body produces amino acids from protein food in the gastrointestinal tract and are both practical and cheap.

Such methods of preparing amino acids involve the possibility of losing some of the essential ones during the procedure of digestion and purification. However, losses are dependent on technical details and moreover can be measured by testing the resultant digest both chemically and biologically for the presence of all the essen-

tial amino acids. Another disadvantage of using these protein hydrolysates as a source of amino acids is the possible generation or introduction of foreign or deleterious substances during manufacture. This difficulty can, apparently, be avoided by carefully conducted procedures

A final possible criticism is the presence of peptides as well as amino acids in the final mixture. This objection appears to be of no practical significance. As long as digestion has been sufficient to remove all traces of true protein molecules, no danger seems to arise from the presence of peptides provided they are not too large. How large they may be is not really known. On the other hand, it may prove advantageous to provide some peptides rather than single amino acids in that one step in the process of building of body protein may be saved.

The several methods for producing amino acids by the digestion of protein may be classified in general into enzymatic and acid hydrolysis methods. Thus far the enzymatic procedure has been the more extensively used and has given very satisfactory results.

In a review on nitrogen balance I⁴ have reported the successful results obtained with use of a protein digest⁵ prepared by pancreatic hydrolysis of casein. This product contains the amino acids of casein and pancreatic tissue, two animal proteins of high biologic value. Al-

though its content of essential amino acids is not accurately known, biologic tests have shown that it contains all in sufficient concentration to support growth in rats when given as the sole source of nitrogen.⁶ This is one of the most rigid tests of the efficiency of protein.

Amino acid preparations produced by enzymatic hydrolysis contain approximately 70% of the potential amino acid nitrogen in the form of amino nitrogen (representing amino acids), most of the remainder being present as peptide nitrogen. In the case of acid hydrolysis more nearly 100% of the nitrogen can be obtained in the form of free amino acids, although it is known that the tryptophan is destroyed in the process of acid hydrolysis. This must be replaced in the products prepared by this method. It has now been demonstrated clinically that protein hydrolysates containing amino acids and peptides, when given in adequate amount, can maintain nitrogen balance effectively and cause regeneration of serum proteins.^{6a}

Standards for Use of Amino Acids

Many preparations are available at the present time offering the advantages of amino acid mixtures for use as a substitute for whole protein food. The pharmacist is often at a loss to know whether these preparations can be used

TABLE 2.—ESSENTIAL AMINO ACID COMPOSITION OF VARIOUS PROTEINS

	HUMAN SERUM GLOBULIN	HUMAN SERUM ALBUMIN	CASEIN	MUSCLE	EGG WHITE	GELATIN
Arginine ..	4.8*	6.1*	4.1	7.2	5.8	7.6
Cystine ...	2.0	3.8	0.3	1.1	2.3	0.1
Methionine	1.0*	1.2*	3.5	3.2	4.4	0.8
Isoleucine..	?	2.0	6.5	3.4	?	1.7
Leucine .	9.3*	11.9*	12.1	12.1	10.7	3.7
Lysine .	0.7*	5.8*	6.9	7.6	6.5	4.3
Histidine .	2.5*	3.5*	2.5	2.1	1.8	1.0
Phenylalanine	5.9	7.8	5.2	4.5	5.5	2.0
Threonine	8.3*	5.0*	3.9	5.3	3.6	1.5
Tryptophan	2.8*	0.19*	1.8	1.2	1.5	0.0
Valine	?	4.1	7.0	3.4	6.8	2.5
Total	43.4 ±	51.4	53.8	51.1	48.9 ±	25.2

These figures were obtained from Block and Bolling ("The Amino Acid Composition of Proteins and Foods," Springfield, Ill., Charles C. Thomas, Publisher, 1945) with the exception of those marked with an asterisk (*), which represent data obtained by the analysis of gamma globulin and crystalline albumin by Brand, Kassell and Sidel, (*J. Clin. Investigation*, 23: 437, 1944). They represent grams per hundred grams of the dry protein on the basis of 16% nitrogen.

Note how deficient gelatin is. Note also that serum albumin is deficient in tryptophan and low in isoleucine. A deficiency of isoleucine in human plasma protein has been shown by Hegsted, McKibbin and Stare in growth experiments (*J. Clin. Investigation*, 23: 705, 1944).

with benefit. Most of them are offered for oral consumption. Entirely apart from their palatability it is obvious that the biological value of such products must be established before they are used for this purpose. Rigid tests should be carried out.

First of all the ability of such preparations to maintain nitrogen balance in the human when supplied as the sole source of nitrogenous nourishment must be counted as a minimum requirement. This means that humans be put on a diet in which the amino acid preparation is the only source of protein. All urine and feces are collected during this period and the nitrogen content estimated. If the patient is in nitrogen balance he excretes less than he ingests during at least three-day or four-day periods. From this it may be assumed that the amino acids are retained and used for the synthesis of tissue protein.

In addition to the achievement of nitrogen balance, evidence should also be available that these products lead to regeneration of serum protein in depleted animals and humans.

A third and still more rigid requirement, and one that is perhaps easiest to carry out, is the ability of such preparations to support normal growth in immature rats when given as the sole source of protein food.

Before accepting products for either oral or parenteral use the pharmacist should be certain that these requirements have been met. The pharmacist must insist upon maintaining nutritional standards for amino acid mixtures and protein hydrolysates just as he does for other preparations. Only in this way can we expect the patient to assimilate and utilize such substances fully.

General Indications

Amino acid mixtures are at the present time available only as protein hydrolysates. They have specific indications and cannot be used as a panacea for all nutritional ills or for all symptoms referable to the gastrointestinal tract. For example, the problem of the malnourished patient who will not eat is not always a simple one and the physician must not expect miracles from amino acids alone, any more than he can always expect dramatic results from vitamin preparations alone. Amino acid mixtures form but one, though important, element of the diet and their use will lead to definitely beneficial effects provided they are used when properly indicated and in conjunction with other nutritional requirements.

Whenever there is a failure in normal ingestion, digestion and absorption of food protein, inevitable deficiencies in protein begin to develop at once unless protein is supplied in some other way. The proper use of amino acids provides a practical method of preventing protein starvation. Any patient who does not eat will develop a protein deficiency; any patient who eats but does not digest or absorb his food will likewise suffer protein starvation. He may, of course, suffer deficiencies in other elements, water and salts, for example.

Just as the universal use of solutions of glucose and saline obviates many of these deficiencies, the wider use of amino acids will prevent deficiencies in protein, which may be just as important as preventing deficiencies of water, electrolyte and vitamins. As far as parenteral administration is concerned, it may be stated as a general proposition that, when solutions of saline or glucose are injected for maintenance of daily needs, amino acids are indicated as well.

Protein deficiencies are actually of frequent occurrence in clinical medicine, yet they are seldom recognized because physicians are apt to view an inadequate protein intake with complacency. While the importance of supplying glucose and vitamins, water and salts has been recognized, other food (*e. g.*, protein) has been looked upon as being dispensable. We have been lulled into a false sense of security by the supposition that there are large stores of reserve body protein and that the absence of protein intake may result in little or no difficulty.

The fallacy of this view is indicated in a recent review⁶ and in other papers in which the various clinical manifestations of protein deficiency have been described. Of these, a decrease in the level of plasma proteins (hypoproteinemia) is of great importance. However, it may be emphasized that hypoproteinemia, while not always found, is one of the objective evidences of protein deficiency, particularly when there is a fall in the albumin fraction. Though often masked by dehydration and an increase in the globulin fraction, a fall in plasma proteins has been observed frequently, especially after operation. Indeed, hypoproteinemia has now been demonstrated to be frequent in both medical and surgical wards of any hospital.

Specific Indications for Clinical Use

A. Patients unable to ingest protein because of severe gastrointestinal disease or persistent vomiting from any other cause: In these cases amino acids must obviously be given parenterally. They

include such conditions as intestinal obstruction, local or general peritonitis, acute cholecystitis and a severe peptic ulcer in which the ingestion of any food provokes severe pain or vomiting. Important in this group are cases of chronic disease such as gastrointestinal carcinoma, in which operation is contemplated in the presence of severe malnutrition which cannot be corrected by a high protein diet. The preoperative preparation in such cases with parenteral protein will lower mortality, facilitate surgery and reduce complications. To be included in this group also are postoperative cases in which abdominal operations have been performed and in which nothing by mouth is permitted in order to achieve gastrointestinal rest so that healing may occur. In such cases, too, protein starvation will obviously occur unless nourishment is given parenterally.

Many manifestations of protein starvation can thus be avoided and the clinical condition be so improved thereby that a full diet by mouth can be started much earlier than when the parenteral injections are limited to water, salts and glucose.

Patients suffering from advanced inanition must also be included in this group. Amino acid therapy recently has been shown capable of saving many lives from the late, or what might be called the hitherto irreversible, stage of starvation.

In the present war thousands, perhaps millions, have died because of inanition. Many died even when food was made available to them; for it has been known for a long time that after a certain point in progressive starvation a fatal outcome cannot be avoided because the gastrointestinal tract becomes incapable of function. Fluid or food cannot be swallowed or, if given by tube, is vomited or provokes diarrhea.

In the recent (1943) famine in India, Krishnan and his co-workers^{6c} showed for the first time that the intravenous injection of a solution containing hydrolyzed protein and glucose reduced considerably the mortality in these late cases. Injections of glucose alone, of saline solution, plasma or blood proved relatively ineffective. Only a few injections, averaging three, of the hydrolyzed protein solution were necessary. After this treatment patients were revived and able to start taking food and fluid by mouth. These investigators reported 5000 injections with few untoward reactions, none of them serious. Their hydrolysate was a papain digest of pork.

B. Patients able to ingest protein but in whom the amount is inadequate or difficulty is encountered in digestion or absorption: In this group of cases

amino acids may sometimes be given orally, but in many they will have to be given parenterally. This group includes a wide variety of diseases, particularly those in which severe malnutrition has developed because of the patient's inability to take sufficient food. After a certain period of malnutrition, the gastrointestinal tract becomes incapable of digesting a sufficient amount of protein food (especially if edema of the gastrointestinal tract is present) and vomiting or diarrhea may result.

Sparing digestion by giving amino acids orally will sometimes obviate the difficulty, as reported by Olmsted,⁷ but in many cases the oral intake of food will have to be supplanted or supplemented for a time by intravenous administration in order to assure a sufficient intake. This is true of those with extreme malnutrition, as just described, but is not infrequently seen after severe injuries and extensive thermal burns.

In other cases digestion or absorption is impaired because of severe gastroenteritis, ulcerative colitis or regional ileitis, so that food by mouth provokes severe diarrhea and thus digestion and absorption are prevented. In such a case also the substitution of amino acids for whole protein by mouth may, by sparing the necessity for digestion, result in adequate absorption, although in many cases it will be advisable to put the gastrointestinal tract completely at rest by giving nourishment parenterally. To be included in this group are certain types of intestinal fistulas in which profuse discharge of undigested contents escape.

C. Other indications including patients with allergy and intractable and especially bleeding peptic ulcer: In cases of extensive protein allergy the use of amino acids instead of whole protein will frequently avoid this difficulty and they have been used as such by a number of observers, especially in infants, with very favorable results.⁸ Olmsted⁷ has used amino acids also during the diagnostic period in severe food allergy, thus avoiding the usual starvation which otherwise occurs.

In peptic ulcer the use of amino acid mixtures orally has proved effective on purely clinical grounds with evidence of healing, as shown by x-ray examination in a series of peptic ulcers previously refractory to medical therapy as reported by Co Tui.⁹ In a series of bleeding peptic ulcers a similar regimen of oral amino acids has been shown by Levy¹⁰ to result in a much more rapid recovery than in cases in which the ordinary regimen of whole protein food has been employed. This may be due to the fact

that the administration of amino acids not only permits protein nourishment without the need for digestion but has an additional advantage in that amino acids act as a buffer and thus tend to neutralize gastric acidity, as shown by Levy and Siler.¹¹

Oral Use of Amino Acids

The use of amino acids by mouth is therapeutically desirable in that it avoids the necessity of protein digestion. Thus it would seem that larger amounts of protein nourishment could be administered in this way and more rapid correction of protein deficiencies in extremely malnourished patients achieved.

While clinical experience is not extensive, it has been my¹² observation that, in many of these patients in whom the ingestion of protein food provokes diarrhea or even vomiting, the substitution of amino acids permits absorption without difficulty. This would seem to be especially true of jejunal feeding; for example, Mulholland and his associates¹³ have administered oral amino acids very soon after gastric resection through a jejunal tube passed across the stomach at the time of operation. They have succeeded in administering a 3000-calorie, 200-Gm. protein diet in this way with striking improvement in postoperative asthenia and rapidity of convalescence.

Amino acids dissolved in water, milk or juices may be taken by mouth. However, the taste of some of the commercial preparations available at present is unpleasant. Attempts have been made to flavor the solution but these have not been entirely successful, although the taste can be partially disguised in a number of ways.

One method, which has been employed by Co Tui, is to stir 20 Gm. of the powdered protein hydrolysate in a small amount of water and ask the patient to follow it up with 20 Gm. of a sugar solution as a chaser. This is done ten to fifteen times a day and thus permits the ingestion of 200 to 300 Gm. of protein substance in the form of amino acids in twenty-four hours.

The unpleasant taste of some amino acid preparations may be avoided by the use of tube feeding. Twenty grams each of a protein hydrolysate and simple carbohydrate in about 200 cc. of water may be administered ten or fifteen times a day during day and night if desired, thus permitting the large intake of 200 to 300 Gm. of protein nourishment along with the same amount of carbohydrate.

While amino acids and glucose alone are the simplest formula for oral feeding, a more complete

diet may easily be administered by adding fat according to the technic devised by Olmsted.⁷ Olive oil is emulsified with the aid of gelatin, and the amino acids and carbohydrates are then added. Olmsted has been able to administer large amounts of food through a gastric tube in cases of severe malnutrition and start the patient on the road to nutritional recovery much more effectively and rapidly than is possible through persuasion or other methods using protein foods.

It should be mentioned, of course, that vitamin mixtures must be added to the amino acids fed by mouth. Any of the preparations on the market may be used, particularly those that are available in liquid form. An adequate amount is simply added to the mixture given by tube.

Parenteral Administration

The parenteral administration of protein food by means of amino acids represents as great an advance in therapy as the injection of glucose as a means of supplying calories or of water and electrolyte in maintaining water balance and in correcting dehydration, or as the injection of crystalline vitamins in combating vitamin deficiencies.

Indeed, the addition of amino acids to the usual parenteral fluids makes possible the administration of an almost complete diet without recourse to the usual digestive processes. Starvation can be avoided almost completely even though the patient is unable to take anything by mouth. Complete rest of the gastrointestinal tract, which heretofore inevitably resulted in protein starvation, can now be achieved with an almost full dietary intake. Thus both food and rest can be utilized; both factors are obviously very important in the healing of many types of lesions both surgical and medical. To limit the parenteral diet to water, electrolyte, glucose and vitamins is no longer justified; the addition of amino acids makes the mixture more nearly complete. A program for such feeding is shown in Table 3.

Methods of Parenteral Administration.—Preparations of hydrolyzed protein are available as sterile solutions ready for intravenous injection or in the form of a powder which with appropriate care and facilities can be made into a solution for intravenous use.

The mixture which I recommend is one containing 5% protein hydrolysate, 5% glucose and 0.2% sodium chloride. A liter of such a solution provides four of the necessary nutritional elements: water, salt, carbohydrate and protein.

It should be emphasized, of course, that the

biologic value of any amino acid mixture or preparation of hydrolyzed protein depends on its content of essential amino acids, and this in turn depends on the proteins selected for hydrolysis as well as the details of the procedure itself. It is therefore important for the pharmacist to be sure that any solution he dispenses has been

loss of either in the urine, though the amount is not very great even with a one-hour injection.

Injections are best given a liter at a time, one in the morning and one in the afternoon. If the injection supplements food by mouth it should be given in the evening or after the last meal so as not to interfere with the eating of food.

TABLE 3.—PROGRAM FOR DAILY PARENTERAL FEEDING (INCLUDING AMINO ACIDS).*

Initially larger doses and plasma or whole blood transfusions may be required to meet acute deficits.

		ACTUAL AMOUNT OF NUTRIMENTS				
	SOLUTIONS REQUIRED	H ₂ O, Cc.	SALT, Gm.	GLUCOSE, Gm.	PROTEIN AS AMINO ACIDS, Gm.	CALORIES
A. No protein depletion	Protein hydrolysate 5% glucose 5%, 1 liter; glucose 5%, 1 liter; isotonic solution of sodium chloride, † 1 liter	3000	11	100	50	600
B. Moderate protein depletion	Protein hydrolysate 5% glucose 5%, 2 liters; isotonic solution of sodium chloride, † 1 liter	3000	13	100	100	800
C. Severe protein depletion	Protein hydrolysate 5% glucose 5%, 3 liters	3000	6	150	150	1200

* Vitamins are given separately. In certain surgical patients vitamin C is especially indicated in doses of 1 Gm per day.

† After severe operations it may be inadvisable to inject saline solution in view of the evidence indicating the existence of a postoperative intolerance to salt (Coller, F. A., and others, *Ann. Surg.*, 119, 533, 1944). In such cases 5% glucose in water is substituted for the isotonic solution of sodium chloride.

sufficiently tested to demonstrate that it contains a sufficient concentration of all the essential amino acids to maintain normal protein metabolism.

The rate of injection of hydrolyzed protein cannot be too great lest symptoms of nausea and vomiting be produced. This rate is somewhat slower than that usually given for glucose solutions alone; *e. g.*, for 1 L. containing 5% protein digest and 5% glucose a two-hour period is usually required in an average sized adult. Great individual variations are observed and it is often permissible to let the patient adjust the rate of flow himself.

In many cases a liter will run in during one and one-half hours with no unpleasant subjective symptoms; in others such a rate will provoke nausea, a feeling of warmth and occasional slight abdominal pain or perhaps other unpleasant symptoms. A two-hour period is really required for full utilization of the injected glucose and amino acids; a more rapid rate may permit

Deleterious Effects—The preparation of intravenous solutions has a special interest for the pharmaceutical profession because many of the details in regard to the preparation of safe sterile solutions for injection into the circulation have been worked out by pharmacists. Moreover, pharmacists in many hospitals are charged with the responsibility of preparing such solutions.

No intravenous injection can be given with impunity; the possible dangers have been sufficiently emphasized by many and great care must always be exercised regardless of the solutions given. The pharmacist must remember, however, that a solution of amino acids is an excellent culture medium and particular care must be taken to prevent contamination. In this sense it is similar to whole blood and plasma except that bacterial growth is much more apt to occur in amino acid solutions. Pyrogenic reactions may be produced by such contamination.

Even with utmost care and elimination of bacterial growth, solutions of amino acids are

potentially as capable of provoking reactions when given intravenously as plasma or whole blood transfusions, although at the Barnes Hospital they have been less frequent than those experienced with plasma or whole blood when given with the same type of tubing and with the same care. Careful scrutiny was made of all injections during the past eight months. Of 2406 liters injected intravenously during this time there were 22 reactions. None was serious. In 12 of them previous and subsequent injections were given without incident.

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CIVIL SERVICE PHARMACY STANDARD TOO LOW

OBJECTIONS of the AMERICAN PHARMACEUTICAL ASSOCIATION to the U. S. Civil Service Commission's ruling that persons who could not qualify for licensure in 45 of the 48 states are eligible for government pharmacy positions has been supported by college deans, associations and other pharmacy officials throughout the country. Calling the Commission's stand "inimical to public interest and prejudicial to the professional standing of pharmacy," the joint A. Ph. A.-N. A. R. D. conference also registered official opposition.

In a letter to the A. Ph. A. secretary, replying to the profession's contention, Harry B. Mitchell, Commission president, cited the Veterans' Preference Act which provides that no minimum education will be prescribed for professional positions except when the Commission decides that the duties cannot be performed by a person who does not have such education.

Mr. Mitchell drew the conclusion that it would be "entirely inconsistent . . . to attempt to justify the writing of minimum requirements" for the position of pharmacist since he was "reliably informed" that "at least more than half of the pharmacists in the United States" do not hold a four-year degree. The Commission insists that its own examination will assure that unqualified persons are not appointed as government pharmacists.

Answering the U. S. Civil Service Commission, A. Ph. A.'s secretary, Dr. Fischelis, pointed out that there is nothing in the law to require the Commission to set its requirements at the lowest level of training or fitness in the field. The

A. Ph. A. is certain, said Dr. Fischelis, that no competent group within the profession "was consulted by the Commission in arriving at its apparent conclusion that pharmacy is not in a class with nursing, dietetics, elementary school teaching and agronomy, either scientifically, technically, or professionally."

The Commission was respectfully requested to make available the findings of fact which led to exclusion of pharmacy from the positions for which formal education requirements are prescribed and which resulted in the inclusion of the other occupations mentioned.

The A. Ph. A. pointed out that at least 80% of the practicing pharmacists are college graduates holding the accepted degree of their day. Although recognizing that there was a gradual evolution to the four-year educational standard, it was explained that this parallels the development of education in other professions for which minimum standards were prescribed by the Commission for eligibility to the qualifying examinations.

After reviewing other information concerning the Commission's policy, Dr. Fischelis concluded that the Commission "is neither meeting the spirit of the Veterans' Preference Act nor acting in the best interest of the people of the United States who must obtain their pharmaceutical service from government pharmacies."

Copies of the A. Ph. A.'s exchange of views with the Commission have been sent to all Congressmen, who also have had the situation called to their attention by many local and state pharmaceutical groups.

TEMPLE STUDENTS VISIT A. PH. A. AS WINNERS OF DISPLAY CONTEST

William Spring and Leonard Russock, winners of a Pharmacy Week window display contest held at Temple University School of Pharmacy, were awarded a trip to Washington to visit the AMERICAN INSTITUTE OF PHARMACY.

The students, both seniors and both sons of pharmacists, are shown in the photograph being welcomed by President George A. Moulton at AMERICAN PHARMACEUTICAL ASSOCIATION headquarters.

After visiting the laboratory, museum, library, publication offices and other facilities at the INSTITUTE, and discussing professional activities with staff members, Mr. Spring and Mr. Russock attended one of the sessions of the A. Ph. A. Council.

Winners of the Washington trip were guests of Wyeth, Inc., which had supplied students with

reproductions of the Wyeth painting, "William Procter—Father of American Pharmacy" to serve as the theme of the display contest. The competition was supervised by John A. Lynch, instructor in commercial pharmacy and display at Temple.

Students receiving honorable mention were Martin Schwartz and Mary Forgach.

PHARMACISTS WILL PUBLISH DIGEST OF LITERATURE FOR PHYSICIANS

To extend its professional relations program, the Barnes-Hind Pharmacy of San Francisco has established a publication, *Medical Briefs*, which will digest recent papers on the use of pharmaceuticals in therapy for use by physicians.

The project is an outgrowth of a consistent advertising program to the medical profession, always with an appeal based on summaries of medical literature pertaining to the product advertised.

"Talking the physician's own language, helping him by making the pertinent facts conveniently available, seems to us," says Robert L. Emerson of the Barnes-Hind Pharmacy, "to be the most sensible and effective way of promoting pharmaceuticals and the pharmacist's services."

Carrying their idea a step further, the pharmacists selected a publisher to work with their printer in developing an editorial and art format for a 16-page professional publication. Reprints and abstracts from leading medical journals will be published, by permission, with advertising appearing on the covers. To maintain the professional atmosphere of the publication it is not planned to illustrate the advertisements.

Barnes-Hind will invite pharmacists of other cities to co-sponsor the publication on an exclusive territory basis. Each pharmacist will have his own advertising in the copies to be used in his own community.

COUNCIL MEMBER HEADS GROUP FOR WAR NURSES MEMORIAL

Dr. H. A. B. Dunning, manufacturing pharmacist of Baltimore and a member of the A. Ph. A. Council, has been named chairman of the executive committee of the Memorial Fund Committee to establish a memorial building in Washington for America's war nurses of World War II.

A campaign has been launched to raise a minimum of \$2,000,000 to construct and endow the memorial.



WINNERS of the Pharmacy Week window display contest at Temple School of Pharmacy are welcomed at A. Ph. A. headquarters beneath the memorial statue of William Procter, Jr. Shown left to right are Leonard Russock, a senior student; John A. Lynch, instructor in display; William W. Spring, also a senior; and Dr. George A. Moulton, A. Ph. A. president.

HIGHLIGHTS OF 1945 ACHIEVEMENTS

ATOMIC power exploded into Victory during 1945 and the world recoiled in fear, as the consequences of any future misuse of this source of energy were recognized. Scientists pushed ahead in new fields of research but it was evident that social, economic and political progress lagged far behind scientific and technological advances.

At year's end pharmacy had turned to meet postwar problems with an enviable wartime record established in both civilian and military practice. Pharmacists were returning from the armed forces to find new drugs on prescription shelves, increased emphasis on preventive medicine and changing public concepts of adequate medical care. A new regulation of the Food and Drug Administration became effective which promised to bring many changes in the labeling and dispensing of drugs.

For members of the AMERICAN PHARMACEUTICAL ASSOCIATION, 1945 marked an expansion of their professional program under the guidance of a new secretary, with membership at an all-time high. Two especially important studies were undertaken: one on the regulation of the distribution of barbiturates, the other on pharmaceutical services in the U. S. Public Health Service.

Extensive revision work on U. S. P. XIII and N. F. VIII neared completion, as pharmaceutical laboratories readied still newer drugs for distribution. Streptomycin and influenza vaccine, for example, were scheduled to take their place alongside penicillin and DDT, two history-making products which had become generally available during the year.

Although many recent research achievements remained unpublished due to security restrictions until the end of the war, even the available reports indicated remarkable advances. The highlights of 1945 in medicine and pharmacy, and in several other scientific fields of special interest, are summarized on following pages from Science Service reports and in part from the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

MEDICINE AND PHARMACY

Streptomycin, which proved effective in controlling tuberculosis in guinea pigs, was given to 34 human patients with a limited suppressive effect; recovery from typhoid in 3 of 5 cases suggested that the drug may bring recoveries and prevent carriers; streptomycin also checked the growth of Friedlander's bacilli and Klebsiella and other bacteria in laboratory experiments.

An operation for saving the lives of "blue babies" born with certain types of heart defects by joining a branch of the aorta and one of the pulmonary arteries to increase the flow of blood through the veins was devised and successfully performed on many patients.

Identity of BAL (British anti-lewisite) was announced as 2,3-dithiopropyl with reports that this alcohol, developed for local use as a skin decontaminant in protection against the war gas, had been found to be an effective remedy for arsenic and possibly mercury poisoning.

Vaccination of all U. S. Army personnel for protection against influenza was ordered.

Penicillin made 25 of 39 babies with congenital syphilis well, brought speedy recovery from trench mouth, and brought improvement for patients with brain and nervous system syphilis.

Muscular dystrophy remedy may come from a new chemical made from the two vitamins, tocopherol and inositol, it was reported.

The virus of horse "sleeping sickness" was iso-

lated from chicken mites.

A new chemical agent, gamma-(*p*-arsenosphenyl)-butyric acid, for use against African sleeping sickness, was reported to give speedy cure of early cases.

Vaccine against dengue, or "break-bone fever," may result from first success in mouse passage and consequent attenuation of the virus.

A new weapon against malaria was developed, consisting of a portable plant for extracting, at low cost, quinine and other anti-malaria drugs from the bark of cinchona trees in the remote spots where they grow.

Influenza viruses cultured on two different kinds of living tissue, chick embryo and mouse lung, were shown to be chemically and physically identical.

Artificial eyes made of plastic instead of glass were developed by Army and Navy dental officers; the plastic eyes resemble natural eyes more closely than do glass ones and are more comfortable to wear.

Riddle of what causes one kind of heart disease, acute interstitial myocarditis of unknown etiology, may be on the way to solution with the discovery of the substance, apparently a virus, that causes a similar ailment in apes and smaller animals.

Evidence was found that infectious hepatitis spreads through contaminated drinking water; this is the first satisfactory evidence that a virus disease can be naturally acquired by humans through water. Gamma globulin, immune substance from blood, gives protection against it.

IN PHARMACY AND RELATED FIELDS

Heparin, anti-blood clotting chemical, may become means of preventing gangrene and loss of limb after frostbite, extensive studies indicate.

A skin graft operation on a hemophiliac was performed successfully for the first time, an active thrombin preparation applied to the place from which the skin graft was taken apparently was responsible for saving the patient from bleeding to death from this wound

Sensitivity to the Rh blood factor may last for lifetime, investigations showed; a blood bank to save the lives of mothers and babies threatened because of a difference between the mothers' and fathers' blood was announced; the Rh factor was found to be absent in chimpanzees

From 10,000 to 15,000 blind persons may have a chance to see again as the result of the formation of an eye bank to collect and make available human corneas for grafting

Persons whose eye lenses have been removed in cataract operations can see ultraviolet radiations invisible to normal eyes, it was discovered

Severe poisoning from breathing the fumes of carbon tetrachloride was successfully treated with

methionine, one of the essential amino acids.

A new remedy and preventive for athlete's foot was found in undecylenic acid, a fatty acid found in sweat.

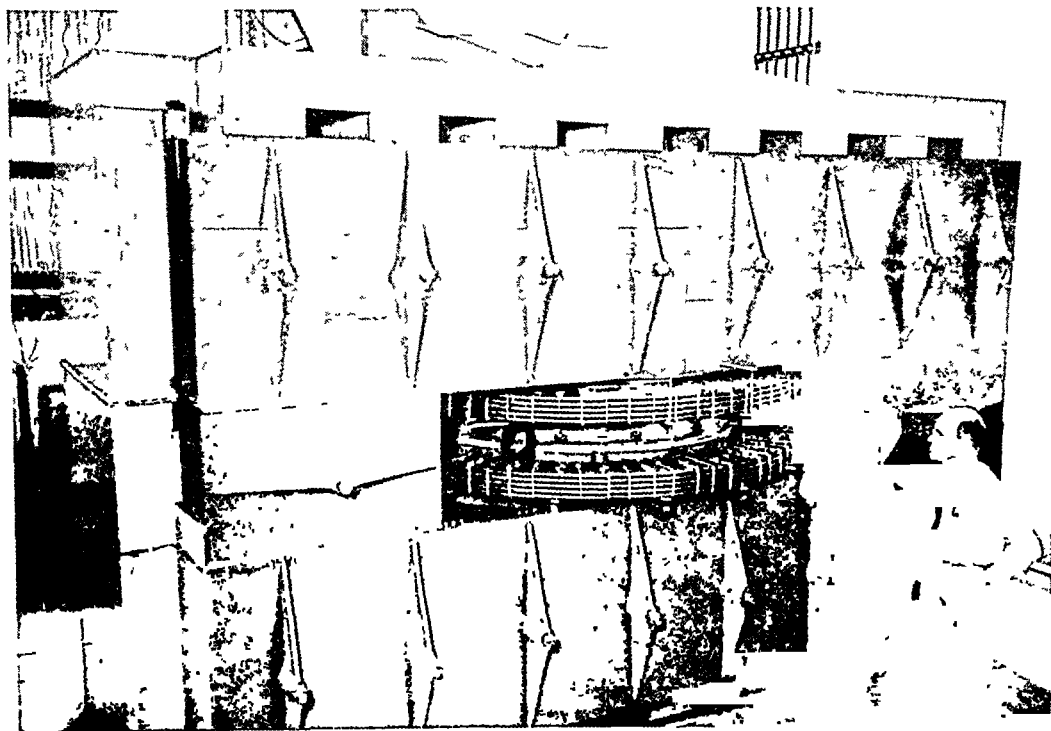
A simple method recently developed as an aid in the diagnosis of cancer of the uterus has been found helpful also in the diagnosis of cancer of the kidneys, bladder and other organs of the genitourinary tract.

Experiments demonstrated for the first time that there is a definite link between the kidney and ovarian functions.

Hearts were successfully transplanted in warm-blooded animals for the first time.

A new approach to conquest of venereal disease by mass testing plus penicillin treatment was pioneered in Birmingham, Ala., where new state law required blood tests and treatment, when necessary, for all citizens between 14 and 50 years, although 260,216 came voluntarily for testing as result of high-pressure publicity program.

Syphilis and tuberculosis case finding were combined for the first time in a 45-day campaign in Savannah, Ga.



HUNDRED MILLION VOLT X-RAYS are produced by this betatron. Hitherto war-secret details, revealed by General Electric laboratories, indicate that the same high-voltage electron stream that produces X-rays can produce other interesting forms of radiation, such as were formerly available only in cosmic rays. Possible adaptation to improve therapy of deep-seated cancer was foreseen.

Actin was announced as a previously undiscovered protein which plays a part in muscle contraction.

The dentist's drill may be replaced by a new device which operates on the sand-blast principle; it is painless, swift and silent, it was announced.

Penicillin was put on the market for general civilian use on March 15.

New ways to give penicillin include: by mouth, using sodium citrate as a buffer against stomach acid; mist inhalations; mixing with special gelatin and chemical to reduce number of injections needed; injections into artery for severe infections of arms and legs; in lozenges; in gelatin capsules; more effective penicillin treatment may result from a new substance in which it is combined with albumin of human blood.

The cause of toothache at high altitudes, studies indicate, is a disturbance of circulation in the pulp of the tooth which prevents equalization of pressures during change in altitude.

Thiouracil, a chemical which suppresses the thyroid gland hormone, helped 7 out of 10 patients with angina pectoris, it was reported.

Possible substitute for a scarce heart disease medicine, fogarine, has been found in a chemical from an Argentine tree.

Discovery of a new vitamin A, twin to the one already known, was announced.

A chemical from mushrooms, tyrosinase, was studied as a promising cure for itch of poison ivy.

Recovery from cholera can be assured in every case, it was announced, by new treatment combining sulfadiazine, plasma and saline injection.

Absenteeism and turnover were reduced and work performance improved when a vitamin supplement was given workers in an aircraft plant.

The mold source of penicillin was found to be a good source of vitamin D₂ when irradiated with ultraviolet.

An antianemia vitamin factor, vitamin B₆ conjugate, was isolated in a new, pure form for the first time.

One of the new B vitamins, folic acid, was reported to have some anti-cancer activity; spontaneous cancers in mice disappeared in the laboratory tests.

All the family's bills for sickness, injury and childbirth can now be paid for \$6 a month under a new expanded medical care plan launched in New York.

At the request of the Surgeon General of the Army, the National Academy of Sciences and the National Research Council created a committee for developing the best possible artificial limbs for war veterans.

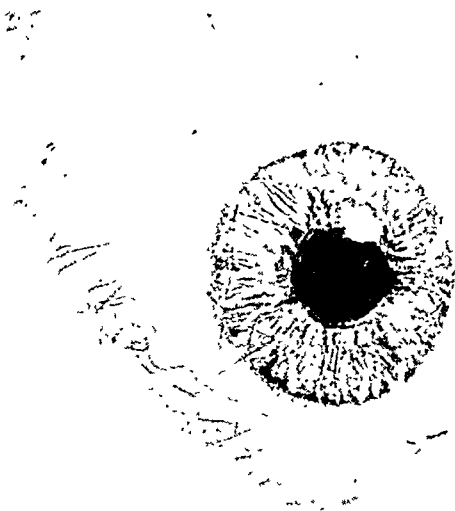
Some strains of influenza virus can act like a poison, damaging the liver and other organs, as well as causing influenza, studies indicated.

Blackout of eyesight in aviators during sharp turns or dive pull-outs at high speeds is due to a temporary anemia in the eyeballs themselves; it can be prevented by suction applied to the eyeballs

by wearing special goggles during flights

Eyes need protection against longer wave lengths of ultraviolet light than was previously supposed; damage to sight may occur without obvious signs of eye injury, studies indicate.

Histoplasmosis, previously considered rare and



THE UNSEEING EYE—Plastic artificial eyes (above) were developed by Army dentists, providing several advantages over glass eyes. Skillful tinting and anatomical construction partly account for the natural appearance. Exact fitting makes possible considerable movement in the socket. Plastic eyes are lighter, more comfortable, less expensive and more durable than artificial eyes heretofore available.

always fatal disease, is apparently widespread in mild form and may be mistaken for healed tuberculosis, X-ray pictures in a tuberculosis survey indicated.

Records for recovery from extensive burns were apparently broken when a Marine who had 83% of his body burned was able to return to duty within three months.

Cancer research progress was given new impetus by \$4,000,000 grant to establish Sloan-Kettering Institute for Cancer Research at Memorial Hospital, New York City, and by expansion of research program by American Cancer Society.

Pain, tenderness and wasting of muscles in some cases of rheumatoid arthritis was apparently explained by finding inflammatory nodules widely distributed in the skeletal muscles and the peripheral nerve trunks.

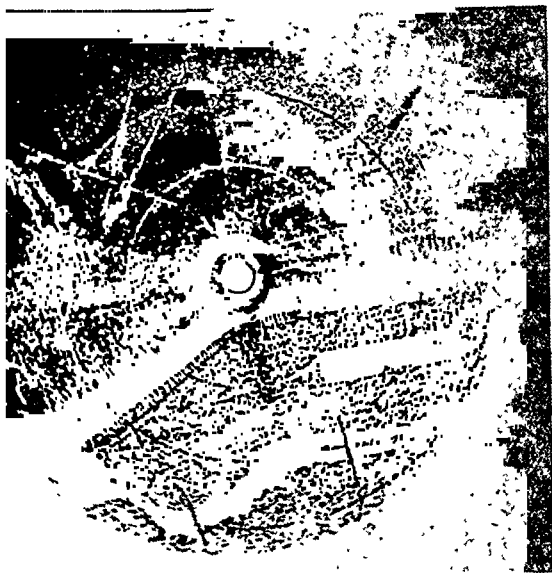
Encouraging results with neostigmine in paraly-

sus, rheumatoid arthritis and crippling from injury or infection were reported.

A new anti-bleeding material prepared from blood plasma and human placentas was announced; extensive studies are necessary before it can be tried on patients with hemophilia.

A study of first, second and third children born per family showed that the unusually large number of births in the United States during the war years, 1941-1944, does not mean more children per family. These years were mainly the starting point for families which had been postponed by the depression and of others which would have been started in later years if there had been no war.

THE ALL-SEEING EYE—Astounding details of radar's power to extend man's vision were revealed as the war ended. Development of microwave radar revolutionized techniques and made obsolete nearly all of the longer-wave types. The radar scope photograph of New York City (below) was taken with new high definition apparatus designed for use against Japan. The outline of Manhattan clearly shows the Hudson River with its shipping docks and other landmarks.



A study of all families in Indianapolis showed that Protestant couples have $\frac{9}{10}$ as many children as Catholic couples, while Jewish couples and mixed Protestant-Catholic couples have about $\frac{9}{10}$ as many as Protestant couples; the larger size of Catholic than Protestant families is especially noticeable in the upper income and educational classes; among the poorer people with little schooling, Protestant families average as large as, or larger, than those of Catholics.

A systematic study of the prenatal stages of human behavior demonstrated a continuity in the patterning of behavior in embryo, fetus, fetal infant and neonate.

Greater production of antibacterial chemicals such as penicillin may come from neutron bombardment of mold spores, it was announced.

Discovery of a change in blood clotting caused by penicillin, pointing both to possible danger and possible further benefits from the mold chemical, was announced.

The Nobel prize in physiology and medicine for 1945 was awarded to Sir Alexander Fleming, discoverer of penicillin, and Sir Howard W. Florey and Dr. Ernst B. Chain, who fathered its development into a life-saving drug.

An Institute of Forensic Medicine, first of its kind in the world, will be established at New York University College of Medicine, it was announced.

The Red Cross will continue to operate for civilians, in cooperation with an approved sponsoring health or medical agency, the blood donor service which has been so successful in supplying blood, plasma and albumin to the armed forces, it was announced.

The chemical structure of streptomycin was almost completely worked out.

New devices to help deaf people learn to talk and use the telephone and enjoy radio by seeing sound patterns for speech and music were developed.

Better treatment of cirrhosis of the liver may possibly come through use of a new medicine, thiouracil, it was announced.

An easy-to-use high-speed camera with self-contained light source was developed for taking pictures of surgical operations.

The uterine principle isolated from *Viburnum prunifolium* was found to be identical with the glucoside, salicin.

A commercial diene-alcohol, hexadienol, was recommended for supplanting pilocarpine and other general parasympathetic stimulants as a sudorific and as a diagnostic agent in localizing anhydrotic areas in the skin.

Experiments revealed new information on the nature and prevention of pyrogens, fever-producing substances which may contaminate pharmaceuticals.

Possible therapeutic uses for the corpuscular residue left after processing human blood to secure plasma were suggested.

A new technique for the treatment of burns was reported, employing a combination of gelatin and sulfonamides.

Three series of aliphatic derivatives of mercury were investigated for possible improvements in mercurial antiseptics.

The following discoveries in antibacterial investigations were also reported: dicumarol, antiblood-clotting substance, has antibacterial activity as well; material obtained from a strain of the fungus, *Aspergillus fumigatus*, checked *M. tuberculosis* in test tubes; a mold from human hair stopped ty-

phoid and dysentery bacteria; the fungi that causes athlete's foot yielded an antibacterial substance; gramicidin, still potent against bacteria, was made less poisonous to animals; a chemical from pine trees may prove useful as an antiseptic; sulfa drugs were made more effective against certain bacteria by use in combination with dyes; a new antibiotic substance, "puchiin," resembling penicillin in its action, was found in Chinese water chestnuts; bacitracin, an antibiotic, was isolated from bacteria found in wounds.



BIOLOGICAL SCIENCES

Several powerful new pesticides, restricted to military and experimental uses during the war, were released for civilian employment; they include DDT and Gammexane (British) against insects, 1080 and ANTU against rats, 2-4-D and ammonium sulfamate against weeds, and G-412 and G-410 specifically against ragweed.

Formulas for several effective mosquito repellents were released by the Army and Navy.

Heartbeats of birds, many times more rapid than those of humans, were counted with a sensitive electrical instrument attached to the twig on which the bird perched or even under the nest.

Plant disease viruses, far too small to be seen with any instrument, were studied by depositing gold films, eight Angstroms thick, on protein particles of submicroscopic size and using an electron microscope.

Bacteriophage, foe of disease germs, formerly invisible, was seen through an ordinary microscope after being treated with a dye and irradiated with ultraviolet rays.

Antibiotic substances similar in action to penicillin were found in lichens, in wilt-resistant tomato plants, in leaves of Scotch thistle, mullein and peony, and in the fruits of blueberry, currant, mountain-ash and honeysuckle.

Mosquito larvae were found to get cramps and drown when breeding ponds are treated with DDT.

Bacteria-like parasites within the bodies of cockroaches were killed with penicillin; soon the cockroaches died also.

Mushrooms, proverbially shortest-lived of plants, were found alive thirty-five years after being sealed up in glass tubes under high vacuum.

Oysters were induced to produce eggs in winter for research purposes by warming them up to mid-summer temperature.

Love-songs of mate-seeking mosquitoes were recorded on phonograph records for use in luring the pests to their death in insect traps.

Fungus that causes one of the most destructive of plant diseases, flax wilt, was found to be a potential source of most of the B vitamins.

Ergot, an aëbolic and hemostatic, was success-



A NEW ULTRA HIGH-SPEED CAMERA with self-contained, high intensity light source was developed at the request of the Army's Surgeon General. It enables photographically unskilled amateurs to take the most perfect pictures yet obtained of surgical operations, and will have many uses in science. Surgeon General Norman T. Kirk is shown inspecting the camera.

fully cultivated under tropical conditions in India.

Radioactive phosphorus injected into the body of a pregnant female mouse was found in the full-grown offspring three months later.

New sources of quinine were located in South America: some species of cinchona were found more abundant than previously believed; the bark of other species was found to produce good yields of quinine.

Large-scale soilless gardens were established in a number of out-of-the-way places in the tropics to produce otherwise unavailable salad vegetables for air force personnel.

Plant growth was speeded by weak solutions of colchicine, the "evolution chemical" used previously to originate new species of plants by multiplying the heredity-bearing chromosomes of old ones.

Carotin, yellow pigment in plants, was found essential to reproduction in cattle.

Tomato plants were stimulated to highest production by protecting them from the heat of the early afternoon sun with tar-paper coverings.

Rubber was extracted from the leaves of *Cryptostegia grandiflora*, a tropical milkweed-like vine, through bacterial fermentation.

Ways were studied of utilizing for livestock feeds the B vitamin manufactured in the cow's stomach and excreted with digestive wastes.

A variety of lettuce that does not "go to seed" with warm weather, called slobolt, was announced.

Resumption of scientific expeditions began with plans for one early in 1946 to Nyasaland, South Africa, to study small animal life.

One species of black wasp was found to kill crop-devouring Mormon crickets at the rate of one million per square mile each season.

Embryo corn plants, cut from kernels with dissecting needles, were successfully grown in sterile laboratory vials.

DDT-rotenone spray was proved practical and economical in controlling cattle ticks in the tropics, making cattle dips unnecessary.

Genes, the heredity-determining units within a cell, were reported as being seen at work, chemically influencing the course of physiology.



ATOMIC POWER

Dropping of an atomic bomb on Hiroshima, Japan, was announced by President Truman on Monday, Aug. 6. A second bomb of the same character was dropped on Nagasaki on Wednesday, Aug. 8.

The War Department released on Aug. 10 a semi-technical report on the processes by which the use of atomic energy for military purposes had been achieved. It was written by Dr. H. D. Smyth of Princeton at the request of Maj. Gen. L. R. Groves, U. S. Army, head of the "Manhattan Project" which was the Army's designation of the atomic bomb project.

In a foreword to the Smyth Report, Gen. Groves stated: "All pertinent scientific information which can be released to the public at this time without violating the needs of national security is contained in this volume—Persons disclosing or securing additional information by any means whatsoever without authorization are subject to severe penalties under the Espionage Act."

Reports by the British and Canadian governments on their share in developing the atomic power project were released simultaneously with the Smyth Report.

The Smyth Report revealed the following steps in the development of the atomic bomb—these steps had previously been withheld from publication by a voluntary secrecy agreement set up by the scientists working on the problem.

Possibility of using the large amounts of energy released by nuclear fission for production of a bomb began in 1939 with confirmation of the announcement of fission of uranium—European-born physicists were instrumental in getting U. S. government support for this project. Scientists voluntarily restricted publication of papers on the subject of uranium fission in scientific journals.

Fission of uranium isotope of atomic weight 235 was the only likely source of atomic power at the time the U. S. government took up the atomic power project.

Research on U 235 fission, using heavy water (D_2O) as the moderator, was under way in both England and Germany in 1939. American scientists substituted specially purified graphite for heavy water.

In order to make the fission reaction self-sustaining, it was found necessary to separate U 235 (less than 0.5% in any uranium sample) from the more abundant isotope U 238 (more than 99%). The more common kind prevents the chain reaction, by absorbing neutrons.

An enormous isotope separation plant, using gaseous diffusion methods, was erected at Oak Ridge, Tenn. Much of the experimental work for the whole project was done there.

Formation of element 94 from Uranium 238 by neutron capture was effected in the Radiation Laboratory of the University of California in 1941. The new element was found to undergo slow neutron fission like Uranium 235. It was named Plutonium.

Plutonium (Pu), element 94, radioactive but approximately as stable as radium, was obtained from Uranium 238, element 92, by way of the intermediate short-lived element 93, named Neptunium (Np). At least two isotopes of each of the new elements, 93 Np 238, 93 Np 239, 94 Pu 238, 94 Pu 239, are known. Uranium 238 changes to Neptunium and Neptunium to Plutonium by beta-ray transformation. Plutonium emits an alpha ray and slowly changes back into U 235.

Manufacture of Plutonium from U-238 allowed utilization of the inert uranium isotope for atomic power purposes. It allowed the advantage of sharp chemical separation of different elements instead of the tedious diffusion methods of isotope separation.

On Dec. 2, 1942, the first self-sustaining nuclear chain reaction ever initiated by human beings began, at West Stands pile, Stagg Field Stadium, Chicago.

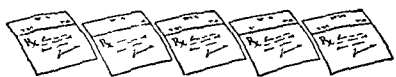
The organization of the atomic bomb project was at first under OSRD. During 1942 and the spring of 1943, control was gradually shifted to the Army, and in May 1943 the Army Engineer Corps took over.

Production of materials for atomic bombs was at first planned to be located at the Clinton Engineer Works at Oak Ridge in the Tennessee Valley. Later the plant for full-scale manufacture of Plutonium was built at Hanford, Wash., and the bomb labora-

tory was located at Los Alamos, New Mexico.

July, 1945, the date of completion of the Smyth Report, found the scientists who had worked on the project prepared for the first use of the atomic bomb as a weapon and looking ahead to the possible peacetime uses of nuclear power and the social consequences of the terrible weapon they had evoked.

International implications of the atomic bomb became apparent when various proposals were considered by Congress and the atom bomb became a growing factor in relations with other nations.



CHEMISTRY AND PHYSICS

Discovery of elements 95 and 96, made by bombardment of Uranium 238 and Plutonium 239 with high energy alpha particles, was announced, thus raising the number of trans-uranic elements discovered as the result of the atomic bomb research to four.

Discovery of Neptunium 237, an isotope of element 93, was announced.

A 100,000,000-volt electron accelerator or betatron for X-rays was perfected; it may also produce other forms of radiation available before only in the cosmic rays.

A 100-ton electronic differential analyzer was announced; no longer needed for secret war research, it is now used to solve scientific and industrial engineering problems for which it was designed.

A tiny oscillator tube, more powerful than any broadcast station, but which gives off its power burst within one-millionth of a second, has been used in radar, it was announced.

Automatic radar recording camera was developed that photographs the radar image on the radar oscilloscope while the operator is watching it.

The proximity or VT fuze exploded projectiles on approaching a target close enough to inflict damage; a miniature radio station in the nose of the shell sends out impulses which are reflected back by a target, the frequency of the echo changing as the target is approached.

Television pictures in full color were successfully transmitted through the air by use of ultra-high frequency radio waves.

Thin stainless steel film on optical glass disks, placed before wide angle lenses, was found to eliminate the problem of "hot spots" on aerial photographs.

An electrical micrometer, so sensitive that it can measure movements as small as one-tenth of a millionth of an inch without touching the object, was developed.

Knowledge of the ionosphere and of the relation of solar activity and geomagnetic and auroral conditions to short-wave radio transmission was advanced to the point where long-range prediction of reception became an actuality.

Chemical analysis of gases, liquids and solids was perfected by shooting X-rays through substances to determine the chemical elements present.

A new elastic electrical insulating enamel made from sand-based silicone was developed to withstand extreme temperature changes and exclude moisture.

Plastics plated with metal produced materials which were found to have inherent properties of the plastic in addition to the desired properties of the deposited metal.

Vinyl chloride co-polymers, new rubberlike plastics, were made by passing acetylene and hydrogen chloride over catalysts.

Quick-molding odorless thermoplastic from cellulose and propionic acid, with electrical properties little affected by atmospheric changes, was made possible by development of a commercially practical process for producing propionic acid from natural gases.

A chemical test for the quality of butter was developed using xylol and replacing the ordinary taste and smell method.

Lightweight, fire-resistant building material, using cement and organic and inorganic fibers and a bit of an inexpensive chemical, which insulates against heat and cold and is nonrotting and termite proof, was developed.

Synthetic organic cements were developed which will hold metal plates without riveting or can be used to bond wood, plastics, rubber or fabrics to a similar substance or one to another.

Sono-radio buoys, that pick up submarine noises by hydrophones and transform them into radio signals, were announced.

An electrochemical method of filtering water freed it of undesirable mineral salts by passing it through two beds of ion-exchange resins.

A perfect mold of optical glass weighing 379 pounds, the largest ever obtained for a scientific instrument prism, was made.

—R—

VETERANS SURVEYED BY RUTGERS

A survey of former students and graduates by the Rutgers University College of Pharmacy indicates that about half of the returning veterans desire help from the College in obtaining employment. Approximately 57% want some kind of refresher course. Of these, a little more than three-fifths want to review courses previously taken in college, while two-fifths especially want to be brought up to date on newer developments in the field.

The Rutgers College is presenting 5 refresher courses and has arranged for a seminar program to be presented by leaders from pharmaceutical industry.

DR. H. A. B. DUNNING CONTRIBUTED TO DEVELOPMENT OF ATOMIC BOMB

A WELL-KNOWN scientist, manufacturing pharmacist, past president of the AMERICAN PHARMACEUTICAL ASSOCIATION and present member of its Council, was accorded recognition for his contribution to development of the atomic bomb at a testimonial dinner given by The Johns Hopkins University in Baltimore on Monday evening, November 26th.

Henry Armitt Brown Dunning of the firm of Hynson, Westcott and Dunning was the recipient of the tribute paid by Dr. Isaiah Bowman, the University's president, who stressed the fact that a working partnership between industry and education had existed long before the outbreak of World War II.

"When we contemplate the atomic bomb as a finished product," said Dr. Bowman, "we must pay tribute to those who had the vision to contribute to nuclear science in its infancy. Dr. Dunning is in this honored company. By his interest as well as support of our work for years before the war, he made possible the contribution of the atomic bomb to Allied victory."

The Johns Hopkins dinner took the form of a testimonial to more than one hundred men and women of its staff who were actively engaged in the development of the VT or proximity fuze and the atomic bomb and many other projects. The guest speaker was Maj. Gen. Leslie R. Groves, director of the Manhattan District which was charged with the development of the bomb, who presented to Dr. Bowman a certificate signed by the former Secretary of War, Henry L. Stimson, stating that Johns Hopkins did "work essential to the atomic bomb thereby contributing to the conclusion of World War II."

In describing the part taken by Dr. Dunning in connection with the bomb's development, it was pointed out that Dr. Robert Dudley Fowler, professor of chemistry at Hopkins, and one of his students, Dr. R. W. Dodson, in 1939 confirmed the discovery by Hahn and Strassmann of the uranium fission.

It was explained that the Hopkins scientists did not stop with checking and verifying the German results, but pressed their investigations further. The research involved was extremely expensive and funds were not available in the regular budget of the University. Outside help was therefore necessary; and Dr. Dunning, whose vision and foresight had long been recognized by his associates, was approached to see if he would be interested in the type of work being undertaken.

At this stage emphasis was concentrated upon



A. PH. A. COUNCIL MEMBER AND PAST PRESIDENT OF ASSOCIATION LAUDED FOR HIS FORESIGHT IN SUPPORTING WORK LEADING TO VICTORY WEAPON

attempts to separate uranium into its two isotopes, uranium 238 and uranium 235; and Dr. Dunning was quick to realize the possibilities of the work, not only in the separation of the uranium isotopes, but also the possibilities that lay in the separation of other isotopes; and he agreed upon a general program of isotope separation in collaboration with Dr. Fowler and Dr. H. S. Brown, one of Dr. Fowler's students.

Uranium hexafluoride was the only volatile compound of uranium known at the time, and it had been prepared only three times previously and then only in small amounts.

The preparation of this compound had been marked with difficulties because of its great chemical reactivity. After considerable difficulty the Hopkins researchers devised a new and much simpler method of producing the compound on a larger scale, and with Dr. Dunning's consent the patents of the process were given to the Federal government. The processes were later adopted by the Manhattan Engineer District and used industrially to produce thousands of pounds of hexafluoride for one of the secret plants which was connected with the atomic bomb project.

In the development of this process for making uranium hexafluoride much experience was gained in the production and handling of other reactive chemicals on a scale hundreds of times larger than ever had been done before.

As a direct consequence of this experience and with equipment set up through Dr. Dunning's aid, the contract was given the University by the Office of Scientific Research and Development in November, 1941, to produce some hitherto unknown compounds. For two or three months attempts were made to produce these new compounds without success. But in February, 1942, a process was devised which met with complete success. It resulted in the discovery of dozens of new compounds. The experiments opened a whole new field of chemistry.

The new materials were much needed for plants of the Manhattan Engineer District at Oak Ridge.

After the initial success of the process, a pilot

DAWN OF VICTORY . . .

THE JOHNS HOPKINS UNIVERSITY

Baltimore, Maryland

Office of the President

August 7, 1945

Dear Dr. Dunning:

I am thinking of you this morning in connection with the big news.* You must be pleased at the outcome of the interest you have shown and the help you have given in an enterprise of such vital importance.

I want to thank you in person at the first opportunity.

With appreciation and best wishes.

Sincerely yours,
(signed) *Isaiah Bowman*

Dr. H. A. B. Dunning
Hynson, Westcott and Dunning
Charles and Chase
Baltimore, Maryland

* re atomic bomb

plant was built and thousands of pounds of material were produced.

The Hopkins project constituted the only source of these materials for the atomic bomb project until the process could be put in large-scale commercial operation.

Without the interest and support of Dr. Dunning, the Hopkins' scientists declare, very important contributions to the atomic bomb could not have been made. "Had it not been for Dr. Dunning's lively imagination, it is very likely that the development of the bomb would have been seriously delayed," the scientists assert.

PENICILLIN ALLERGIES AGAIN NOTED

That penicillin may occasionally cause allergic reactions is again emphasized in a report by Dr. J. H. Lamb of Oklahoma City (*Arch. Dermatol. Syphil.*, 52: 93, 1945), citing two cases of vesicular eruption. Neither reaction was of serious consequence except that the drug had to be discontinued because of extreme pruritus.

Patients to be treated should be questioned about previous reactions to fungi, he suggests. If such reactions have occurred an intradermal test for sensitivity should be made with 500 to 1000 units.

USE AND MISUSE OF VITAMINS

PROPER ROLE OF SUPPLEMENTARY AND THERAPEUTIC CONCENTRATES CONFUSED BY CONFLICTING CLAIMS BUT LEGITIMATE NEED IS GREAT

UNWISE exploitation of vitamins by some less responsible firms has led to considerable confusion, not only of the public but of the professions as well, concerning the legitimate uses of these preparations. Misinformation naturally thrives in a relatively new field where investigators themselves have not reached agreement on a number of points.

The danger in this situation is pointed out by Dr. Norman Jolliffe of New York City, who prepared an authoritative discussion on the use and abuse of vitamins for the Council on Foods and Nutrition of the American Medical Association (*J. Am. Med. Assoc.*, 129: 613, 1945).

"When a person buys a vitamin product as a panacea," the report stated, "it makes little difference whether he does so because of unbounded claims over the radio, in newspaper or magazine advertisements, syndicated health columns or magazine articles or by a druggist, a doctor or a friend; the expected miracle often fails to materialize. The resulting disappointment, multiplied many thousand times, may lead to a loss of public confidence and the eventual rejection of the good in scientific nutrition as well as the bad in its exploitation. Already there are indications that interest and faith in nutrition have begun to wane."

Pharmacists, like physicians, are frequently consulted for nutritional information. Since patrons will usually place more faith in the pharmacist than in a radio commercial, injudicious advice may actually be more detrimental to good nutrition than misinformation in radio advertising.

To date there has been insufficient distinction between supplementary and therapeutic vitamin preparations. Most products on the market are of the supplementary type, to be taken with the regular diet to assure adequate intake of the nutrients specified. In ordinary dosages these preparations are not sufficiently potent to be of value in treating actual vitamin deficiencies.

Supplementary preparations are *preventive*, and may be prescribed by the physician in pathologic conditions requiring increased vitamin

intake or where the diet, for one reason or the other, is not satisfactory. These products ordinarily supply in one dose or divided doses the amounts shown in the following table taken from Dr. Jolliffe's report. Both supplementary and therapeutic preparations may consist of a single vitamin or combinations of vitamins.

SUPPLEMENTARY VITAMIN MIXTURES

Vitamin A.....	4000-5000	I. U.
Vitamin D.....	400-800	I. U.
Thiamine hydrochloride....	1-3	mg.
Riboflavin.....	2-3	mg.
Niacin amide.....	10-20	mg.
Ascorbic acid.....	30-100	mg.

Even though an unsatisfactory diet may be lacking in essentials other than these vitamins, Dr. Jolliffe indicates that for those persons who do not or cannot regularly consume a satisfactory diet a proper vitamin supplement should be prescribed. Dr. Jolliffe takes issue with some authorities who believe that a vitamin supplement may conflict with obtaining the best possible dietary.

"It should be noted," he says, "that the increase in vitamin sales between 1939 and 1944 coincided with, and did not prevent, a decided improvement in the per capita American diet. It may be that vitamin supplements call to the attention of their users the importance of a satisfactory diet."

As a simple but not infallible guide to a satisfactory and adequate diet the following check list was suggested:

CHECK LIST FOR A SATISFACTORY DIET

Include at least:

- (1) 4 eggs weekly.
- (2) 1 serving daily of citrus fruit, tomato or their juices, or fresh uncooked salad greens.
- (3) 1 quart of milk daily for children, with an extra source of vitamin D.
1 pint of milk daily, or its equivalent in cheese, for adults.
- (4) 1 serving daily of lean meat, fish, poultry or seafood.
- (5) 1 serving daily of a cooked leafy green or yellow vegetable.
- (6) 1 serving daily of another vegetable or fruit.
- (7) 1 portion daily of enriched or whole grain bread or cereal.

When true deficiency disease has developed from inadequate diet or from conditions which increase the requirements for vitamins or interfere with their digestion, absorption or utilization, the supplementary dosage levels, designed as preventive, are no longer sufficient. The Council article points out that therapeutic levels are usually three to five but may be ten or more times the minimum daily requirements.

Obviously, expert medical diagnosis and carefully formulated therapy are essential when deficiency disease exists. Competent diagnosis is made from anatomic, chemical or physiologic alterations characteristic of deficiency disease, evaluated in the light of the history and of clinical and laboratory findings.

"Adequate therapy of deficiency disease," Dr. Jolliffe states, "requires not only sufficient administration of the specific nutrient long enough to obtain maximum reversal of the manifest lesion but also, in addition, the restoration of tissue normal in all the essential nutrients. This can best be accomplished by a judicious combination of diet, a source of the whole vitamin B complex, the essential vitamins (vitamin A, D, B₁, B₂, C and niacin amide) and specific therapy."

It is recommended that the physician prescribe the entire vitamin B complex, preferably in the form of brewers' yeast, brewers' yeast extracts or crude extracts of whole liver, liver concentrates or desiccated liver, wheat germ or rice-bran extracts. These natural sources were not suggested because of their content of thiamine, niacin and riboflavin, but because of other B complex nutrients not yet synthesized.

"Many conscientious physicians have been lulled into the belief that a dose of several milligrams of a yeast or liver fraction fortified with synthetic vitamins, in a capsule or a pleasantly flavored syrup or elixir, constitutes adequate B complex therapy," Dr. Jolliffe observed. "Liver and yeast products should be administered in grams and ounces rather than in grains and milligrams."

Because deficiency disease usually involves a multiple tissue deficiency of the fat- and water-soluble essential vitamins, a preparation containing large amounts of these vitamins is also given. A suggested formula is as follows:

Vitamin A.....	25,000	I. U.
Vitamin D.....	1,000	I. U.
Thiamine.....	5	mg.
Riboflavin.....	5	mg.
Niacin amide.....	150	mg.
Ascorbic acid.....	150	mg.

The physician will usually prescribe the prepa-

ration in this dose twice daily for a week or ten days, then once a day.

Specific vitamins indicated by the particular nutritional disease are added to the therapy of diet, vitamin B complex and essential vitamins. For lesions of vitamin A deficiency, 50,000 to 150,000 I. U. of vitamin A may be prescribed; other vitamin deficiency lesions may require 10 to 20 mg. or even 100 mg. of thiamine, 5 to 15 mg. of riboflavin, 100 to 1000 mg. of niacin amide and 100 to 1000 mg. of ascorbic acid.

In view of the above regimen required for adequate therapy of true vitamin deficiencies, Dr. Jolliffe points out that therapeutic claims for supplementary levels of vitamins is one of the principal abuses of vitamin promotion to the laity. Under special conditions, in mild cases of deficiency, supplementary levels may be effective. But since even those physicians who are nutrition experts "seldom, if ever, treat a deficiency disease with vitamin doses in supplementary levels, it does not seem to be in the public interest for therapeutic claims, no matter how qualified, to be made in advertising supplementary levels."

Dr. Jolliffe cites the "failure to tell all" in some advertising as another contributing factor to misconceptions concerning the legitimate uses of vitamins. Among such examples he cites the stressing of economy of vitamin preparations as compared to food costs; incomplete quotations or statistics from the literature; enumeration of signs and symptoms of deficiency disease which vitamins will prevent but without information that such symptoms are not specific for nutritional disorders; implications that the vitamin user will become more alluring to the opposite sex (except as far as the preparation will maintain normal health); and implications that natural vitamins are superior or safer than synthetic vitamins.

In refuting any claims on the latter point, the Council article cites the statement of the National Research Council's Food and Nutrition Board that "there can be no possible difference between thiamine prepared synthetically and that which is extracted from a natural source of thiamine such as wheat or meat (or yeast). The same is true of riboflavin and of other vitamins that thus far have been synthesized. A vitamin is a chemical compound whether it is made by nature or by man."

The third possible source of confusion concerning vitamins is "advertising puffery." Examples cited are claims for some vitamin or mineral whose value in human nutrition has not yet been established; claims that vitamins will

enable a person to neglect his diet; implying that a normal person who consumes a satisfactory diet will feel better if he takes vitamin supplements; and inferences concerning either the ease or the impossibility of the average consumer's obtaining an adequate diet from food alone.

As the dispenser of vitamins and an adviser to physicians on pharmaceutical products, it is important that the pharmacist keep in mind the basic rationale of the proper use of vitamins and the common types of misconceptions concerning their role in nutrition, as have been quoted from the material published by the A. M. A.'s Council on Foods and Nutrition.

That there is a very large legitimate need for vitamin supplements and therapy, within the bounds of our present scientific knowledge of vitamins in nutrition, is indicated by a report from the Department of Agriculture's Bureau of Human Nutrition and Home Economics.

Although the evidence indicates that there has been a steady improvement in the dietary of the American public over the past few years, about three-fourths of the nation's families reportedly had diets in 1936 that did not meet the National Research Council's recommendations for riboflavin; and about half had diets that were low in calcium, thiamine and ascorbic acid. It is estimated from a survey in the spring of 1942 that "the diets of more than half of the families still did not meet the recommended allowances for riboflavin and that the proportion of diets low in calcium had been reduced to less than a third; the proportion low in thiamine to a fourth, and the proportion low in ascorbic acid, in which there was the greatest improvement, to less than a tenth.

"Some of the improved situation in respect to ascorbic acid was a result of seasonal increases in the consumption of citrus fruit and leafy greens. There was also a great reduction in the estimated proportion of families that had diets failing to meet current recommendations in vitamin A value, iron and protein, from about a fourth in the earlier period to around a tenth in the later period."

Department of Agriculture estimates show that in 1944 the amount of food entering the civilian market contained a satisfactory level of nutrients, after allowances for edible waste and cooking losses, when figured on a daily per capita basis. It is emphasized, however, that the pattern of distribution is uncertain, which probably means that a large number of people received amounts above or below the average per capita consumption.

On the other hand, Dr. R. M. Wilder has ex-

plained that the National Research Council's recommended daily allowances of nutrients, usually used as a standard for comparisons, contain at least a 30% margin of safety to provide for persons whose nutrition requirements may be above average. It does not necessarily follow, therefore, that everyone whose diet does not measure up to the recommended allowances has a need for vitamin supplements or therapy.

Although these factors lead to varying evaluations of the prevalence of vitamin-deficient diets, Dr. Jolliffe concluded that "compared to the satisfactory diet, there is a high prevalence of unsatisfactory diets in all sections of this country. To take any other stand is to ignore the facts."

PENICILLIN DISTRIBUTION IMPROVED BY THREE-POINT CPA PROGRAM

Supplies of parenteral penicillin, irregular in many areas late in 1945, will be much improved hereafter through a three-point program of the Civilian Production Administration. Factors contributing to the spot shortages, according to government officials, were: decreased production due to poor quality of corn steep liquor used for growing the mold; rising foreign demand; and diversion of production to oral and topical forms.

To meet this situation the CPA re-introduced a limited form of control over distribution; restored export controls through the Office of International Trade Operations of the Department of Commerce; and joined with industry to assure that a higher grade of corn steep liquor would be available.

Under the direction covering distribution, producers must treat orders from civilian, Public Health Service and Veterans' hospitals as though they bear CC preference ratings, next highest to military priority. Manufacturers are required to give preferential treatment to such orders up to 40% of their current production, and all penicillin which a producer buys for resale is subject to preferential orders.

Because increased production of penicillin tablets, capsules and ointments has somewhat decreased production in the injection form, producers are required to operate their facilities wherever possible to provide adequate quantities of penicillin in the dosage forms required to fill hospital and certified orders.

No procedure for placing preferential orders from private physicians or pharmacists was made available, but officials believe that export controls and better distribution will provide sufficient supplies through customary channels.

NEW AND NONOFFICIAL REMEDIES

recently accepted by the

COUNCIL ON PHARMACY AND CHEMISTRY, AMERICAN MEDICAL ASSOCIATION

Council descriptions of drug products are published regularly in This Journal as they are accepted. Rules upon which the Council bases its action appeared in the November, 1945, issue (6: 329, 1945) and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago 10.

INTOCOSTRIN.—A curare preparation containing therapeutically desirable constituents of curare.

Actions and Uses.—Intocostrin has been shown by physiologic tests to have a substantially pure curare action; that is, it paralyzes the skeletal muscles. This paralysis results from an interruption of the nerve impulse at the myoneural junction. The diaphragm and intercostal muscles are usually the last to be affected. The action of the drug is brief because of rapid excretion and destruction. If respiration is embarrassed or arrested, neostigmine, a physiologic antidote, will assist in counteracting the curare effect, but properly instituted artificial respiration may be necessary to maintain respiration until the curare effect has diminished. The curare activity in intocostrin is due almost wholly to the presence of an alkaloid, d-tubocurarine, which accounts for about half the total solids in intocostrin. This alkaloid has been isolated as a pure crystalline salt. Intocostrin may be used to soften the severity of convulsions and to prevent fractures in shock therapy of mental diseases; to produce muscular relaxation during the reduction of fractures or dislocations, or during certain manipulative diagnostic procedures; to produce a more or less transient reduction of hypertonia, tremor, incoordination, athetosis and dysarthria in certain neurologic conditions and, with certain precautions, to aid in the diagnosis of myasthenia gravis.

Intocostrin can be used by those experienced in such use as an adjuvant to anesthesia. *The drug is not, however, without its dangers.* Overdosage produces paralysis of the respiratory muscles. Experimental work on dogs indicates the possibility of added toxic effects following the use of large doses of atropine with curare. Clinically, however, no difficulty has been encountered with therapeutic doses of belladonna alkaloids, and it is claimed that such premedication is desirable. The value of intocostrin in anesthesia is the development of adequate muscular relaxation. It is claimed that the amount of anesthetic and depth of anesthesia may be decreased.

Dosage.—In softening the convulsions of shock therapy or to produce relaxation in manipulative procedures: 0.5 unit per pound of body weight (but the initial dose for adults should be 20 units less than this total), administered intravenously at a uniform rate during one to one and one-half minutes. Larger doses may be necessary, but if the estimated dose fails to produce paralysis another full paralyzing dose should not be given for twenty-four hours. Preparations should always be made to cope with respiratory failure. Neostigmine, 2 cc. of 1:2000, should be at hand for intravenous injection if required, and an airflow should be available on the tray to assist in artificial respiration in the event of obstructed breathing. In spastic and athetoid states in children: 0.5 to 1.5 units per pound of body weight administered intramuscularly at four-day intervals. As a diagnostic agent in myasthenia gravis: one-fifteenth to one-fifth of the average adult dose, intravenously followed always in two or three minutes by the intravenous injection of 1.5 mg. of neostigmine methylsulfate with 0.65 mg. of atropine sulfate.

In order to obtain muscular relaxation during light (second plane) anesthesia with cyclopropane, nitrous oxide or barbiturates, 40 to 60 units of intocostrin may be administered when the skin incision is made: 20 to 30 units may be added in three to five minutes, if needed. If the operation has lasted more than forty-five minutes, an additional dose of 30 to 40 units may be cautiously administered if such additional dosage seems indicated. In an alternative method as much as 100 units has been administered in a single intravenous injection at the beginning of or during anesthesia, but no additional quantities should be given following this large dose until some time has elapsed and then extreme caution exercised. The drug apparently may be used with any type of anesthetic agent, *although with either only about one-third of the dose otherwise employed should be used.* It must be remembered, however, that the use of intocostrin as an adjuvant to surgical anesthesia is still in a stage which requires continued careful study.

Curare has been extensively used with sodium pentothal anesthesia, usually by separate injection. If a barbiturate solution (alkaline) is mixed with intocostrin solution (acid) a precipitate is formed, which is redissolved when a sufficient amount of the barbiturate with its buffer has been added. The precipitate is the free barbituric acid derivative. If an intocostrin solution is alkalinized with sodium

carbonate, no loss in potency occurs during a twenty-four hour period and no precipitate forms when the alkalized solution is mixed in any quantity with a barbiturate solution. Such mixtures have not been used clinically; the present method is to inject the solution separately and alternately through a Y-tube using the same needle. When by this method into-costrin follows the barbiturate, a slight fine precipitate forms at the surface of contact of the two solutions. It has been the custom to allow such a precipitate to be injected slowly, as it presumably redissolves on mixing with the plasma.

Preparation —

Intocostrin prepared from *Chondodendron tomentosum* extract is made by first extracting with alcohol a desiccated curare obtained from a heavy syrup of the bark and stems of *Chondodendron tomentosum*. The alcoholic extract is evaporated to dryness, a sterile filtered solution having a pH of 4.6–4.8 is made and adjusted to a standard potency of 20 units per cubic centimeter. The final solution contains sodium chloride 0.45 per cent and trichlorobutanol 0.5 per cent, sterilized by filtration and its pH again adjusted to 4.6–4.8.

In the preparation of intocostrin from pure d-tubocurarine chloride crystals, the crystals are obtained from the desiccated curare or from the crude syrup.

Tests and Standards —

Dilute in a large pyrex test tube 0.25 cc. of intocostrin with 25 cc. of distilled water and add 0.2 cc. of concentrated sulfuric acid and 2 cc. of 1 per cent potassium iodate solution. Mix and warm in a water bath at 50°C for one-half hour. A yellow color is developed.

The physiologic activity of intocostrin is determined on rabbits; the provisional unit is equivalent to the potency 0.15 mg. of d-tubocurarine chloride.

E. R. SQUIBB & SONS, NEW YORK

Intocostrin Solution: 10 cc. vials. Each cubic centimeter contains an amount of intocostrin equivalent to 20 units; sodium chloride 0.45 per cent and chlorobutanol 0.5 per cent as a preservative.

NIKETHAMIDE (See New and Nonofficial Remedies, 1944, p. 330)

The following dosage form has been accepted:

GEORGE A. BREON & CO., KANSAS CITY, MO

Sterile Solution Nikethamide 25% W/V: 1½ cc. ampuls

SULFADIAZINE (See New and Nonofficial Remedies, 1944, p. 178).

The following dosage form has been accepted.

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Tablets Sulfadiazine: 0.5 Gm

DIETHYLSTILBESTROL (See New and Nonofficial Remedies, 1944, p. 417).

The following additional dosage forms have been accepted:

GEORGE A. BREON & CO., KANSAS CITY, MO.

Tablets Diethylstilbestrol: 50 mg.

Caplets Diethylstilbestrol: 50 mg.

PENICILLIN (See Supplement to New and Nonofficial Remedies, 1944, p. 18).

The following dosage form has been accepted:

SMITH-DORSEY COMPANY, LINCOLN, NEB

Penicillin (Sodium Salt): 100,000 Oxford unit vials and 100,000 Oxford unit vials packaged with an accompanying 20 cc. vial of isotonic solution of sodium chloride

CHAS. PFIZER & CO., INC., BROOKLYN

Penicillin Calcium: 200,000 Oxford Unit bottles

SULFANILAMIDE (See New and Nonofficial Remedies, 1944, p. 184)

The following additional dosage form has been accepted:

THE SMITH-DORSEY CO., LINCOLN, NEB

Sulfanilamide (Powder): 5 Gm vials

SULFATHIAZOLE (See New and Nonofficial Remedies, 1944, p. 191)

The following additional dosage form has been accepted

THE SMITH-DORSEY CO., LINCOLN, NEB

Sulfathiazole (Powder): 5 Gm vials.

ALLERGENIC PREPARATIONS (See New and Nonofficial Remedies, 1944, p. 35)

The following extract now stands accepted:

WYETH, INC. PHILADELPHIA

Allergenic Extract: The following extract is marketed in treatment packages of five 1 cc. size cartridge ("Tubex") vials representing graduated concentrations, namely 100, 1000, 6000, 20,000 and 20,000 pollen units per cubic centimeter. Also in treatment packages of five 1 cc. size cartridge ("Tubex") vials, each representing 20,000 pollen units per cubic centimeter

Ragweed Combined (Giant and Short Ragweeds, in equal proportions)

The pollen is weighed and extracted with ether. After removal of the ether the material is mixed with the extracting liquid, consisting of a 0.5 per cent sodium chloride solution containing approximately 0.28 per cent of sodium bicarbonate and 0.5 per cent of phenol and covered with toluene. After three days the extract is subjected to Berkefeld filtration and tested for sterility. Standardization is on the basis of pollen units, 1 pollen unit being equivalent to 0.001 mg. of pure pollen.

MENADIONE (See New and Nonofficial Remedies, 1944, p. 638).

The following dosage forms have been accepted.

SHARP & DOHME, INC., GLENOLDEN, PA

Tablets Menadione: 1 mg

Solution Menadione (in peanut oil) 2 mg. per cc.: 1 cc ampuls

SULFADIAZINE (See New and Nonofficial Remedies, 1944, p. 178).

The following dosage form has been accepted:

McNEIL LABORATORIES, PHILADELPHIA

Tablets Sulfadiazine: 0.5 Gm.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1944, p. 608)

The following dosage form has been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK
Tablets Thiamine Hydrochloride: 1 mg.

VITAMIN B COMPLEX SYRUP.—A syrup prepared from a concentrated extract of dried brewers' yeast and an extract of corn processed with *Clostridium acetobutylicum*, with inverted cane sugar 40 per cent weight by volume and natural flavoring.

Actions and Uses.—Proposed for prophylaxis and treatment of conditions arising from deficiency of the vitamin B complex.

VI-Co PRODUCTS CO., CHICAGO

Vitamin B Complex Syrup: Each 5 cc. contains thiamine hydrochloride 1.5 mg., riboflavin 1.0 mg., pyridoxine hydrochloride 0.5 mg. and nicotinic acid 7.0 mg., with other vitamin B complex factors as extracted from 10 Gm. of dried brewers' yeast.

U. S. Patent 2,193,876 (March 19, 1940; expires 1957).

THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1944, p. 373).

The following dosage forms have been accepted:

BARLOW-MANEY LABORATORIES, INC., CEDAR RAPIDS, IOWA

Tablets Aminophylline: 0.1 Gm. and 0.2 Gm.

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Tablets Aminophylline: 0.2 Gm. enteric coated with shellac.

Calcium Levulinate (See New and Nonofficial Remedies, 1944, p. 457).

The following dosage forms have been accepted:

CHEMO PURO MANUFACTURING CORP., LONG ISLAND CITY, N. Y.

Calcium Levulinate: 30 Gm. and 480 Gm. bottles.

CARROLL DUNHAM SMITH PHARMACAL CO., ORANGE, N. J.

Calcium Levulinate Injection 10% W/V: 1 Gm. in 10 cc.

BISMUTH SUBSALICYLATE (See New and Nonofficial Remedies, 1944, p. 236).

The following dosage form has been accepted:

THE SMITH-DORSEY CO., LINCOLN, NEB.

Bismuth Subsalicylate in Oil with Chlorobutanol: 50 cc. vials. A suspension of bismuth subsalicylate in peanut oil containing in each cubic centimeter bismuth subsalicylate 0.13 Gm. with 3 per cent chlorobutanol added.

ANTIVENIN (LATRODECTUS MACTANS).—An antitoxic serum prepared by immunizing horses against the venom of the black widow spider (*Latrodectus mactans*).

Actions and Uses.—This material, which is standardized on the basis of its ability to neutralize the venom of the black widow spider when the two are injected simultaneously in mice, is claimed to be in-

dicated in the treatment of patients suffering from symptoms due to bites inflicted by the black widow spider (*Latrodectus mactans*). Prior to use, tests for serum sensitivity should be made, test material consisting of 1:10 dilution of isotonic solution of normal equine serum, which is injected intradermally. If there is a positive skin reaction, an eye test consisting of placing a few drops of the test material on the conjunctiva and watching for ten minutes should be undertaken. If there is a negative result from the skin test, the therapeutic serum can be administered. However, if there is a positive reaction in the eye following the positive skin test, serum therapy should be avoided. If there is a positive skin test and a negative eye test, the individual may be desensitized before administering the serum. The amount of material injected into the skin for the intradermal test should be not more than 0.02 cc. of the test material. The result can be evaluated in ten minutes, a positive reaction consisting of an urticarial wheal which is surrounded by a zone of erythema.

Associated treatment includes hot plunge baths, intravenous injection of magnesium sulfate, 20 cc. of 10 per cent solution or intravenous injection of 10 per cent calcium gluconate. Barbiturates may be used for restlessness. Apparently nothing is gained by local treatment at the site of the bite.

Dosage.—An injection of 2.5 cc. of serum is administered intramuscularly.

SHARP & DOHME, INC., PHILADELPHIA

Lyovac Antivenin (*Latrodectus mactans*): "Vacule" ampul-vial containing a sufficient amount of lyophilized antivenum to yield 2.5 cc. of restored double-concentrated antivenin with phenol 0.35 per cent as a preservative; packaged with a 2.5 cc. ampul of distilled water and one 1 cc. vial of normal horse serum (diluted 1:10) as test and desensitizing material.

A lyophilized antitoxic serum prepared by injecting horses with venom of black widow spiders (*Latrodectus mactans*).

A process of lyophilization consists in the following: The antivenin in specially designed final containers is immersed in a freezing mixture to congeal the substance rapidly with the least molecular rearrangement. The container is then subjected to a high vacuum to accomplish dehydration, which is continued until the residual moisture content is less than 1 per cent, and finally sealed under vacuum.

PYRIDOXINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1944, p. 618).

The following dosage form has been accepted:

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Solution Pyridoxine Hydrochloride: 1 cc. ampuls of 25 mg. and 50 mg. per cc. and 10 cc. vials of 50 mg. per cc.

The Hospital Pharmacist

EDITORIAL

OPPORTUNITY FOR VETERANS

by LEO F. GODLEY

AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

PHARMACISTS the nation over who are interested in hospital pharmacy and its development are eager to see our services expanded now that increasing numbers of pharmacists are being released from military duty. It is assumed that many pharmacists whose past experience has not been in hospital pharmacy will fill many of the positions in hospitals that never before have employed a pharmacist.

The fact that there is a greatly increased demand for pharmacists in hospitals is an indication that eventually all hospitals of more than 50 beds will have a full-time pharmacy staff. It is a proved fact of hospital economics that in a 50-bed institution there is sufficient need of pharmaceutical services to justify the employment of a hospital pharmacist full time.

The following data were taken from a tabulation of a survey of 82% of U. S. civilian hospitals published by Hudenburg in an article entitled "Statistical Report on Distribution of Facilities" (*Hospitals*, October, 1945):

Bed Capacity	Number of Hospitals	Percentage of Total Group	Pharmacies No.	%
1 to 50	1943	38.9	278	14.3
51 to 100	1120	22.4	347	31.0
101 to 250	1111	22.3	792	71.3
Over 250	819	16.4	720	87.9
	4993	100.0	2137	42.8

The fact that hospital administrators are striving to equilibrate the figures for hospitals and pharmacies is demonstrated by the frequency of requests for hospital pharmacists in the "help

wanted" section of pharmaceutical, medical and hospital journals.

Since it is true that all of the pharmacists who aspire to satisfy this demand unfortunately are not trained in hospital pharmacy, it might be well to summarize the essential differences in this type of practice.

First and most important, there is a greater awareness that one is selling a *service* rather than a piece of merchandise. There is little or no exchange of monies. There are no shoppers for bargains nor over-the-counter selling. The "customers" are the in-patients and clinic out-patients of the hospital. There is a close association with all members of the health profession and their inspection is critical and inspiring.

The pharmacist working alone in a hospital for the first time will be greatly bewildered by different applications of familiar routines and techniques. The narcotic picture changes from a rather insignificant factor in retail pharmacy to a major daily consideration. Alcohol being tax free, a door to greater economy in manufacturing is opened. Manufacturing of powders, ointments, tablets and sterile medications presents fertile fields for specialization and economy. Purchasing is an important procedure which requires professional and clerical acumen. Much has been written on the pharmacist as a source of information; certainly in the hospital, his role in this connection is doubly conspicuous. Hence a coveted professional service and dignity is attained through maintaining an adequate library.

It is necessary for the pharmacist inexperienced in hospital pharmacy procedures, who assumes the responsibility of a department, to acquaint himself with hospital pharmacy literature, visit and study well-conducted departments,

and contact other hospital pharmacists through local and national organizations.

The chairman of the American Society of Hospital Pharmacists points out that "the A. S. H. P. has as its objectives the improvement and the extension of the usefulness of hospital

pharmacists to their institutions, to the profession of pharmacy and to the members of the other health professions." Our professional publications and national and local organizations are the bonds designed to produce solidarity among hospital pharmacists old and new.

PHARMACY OF PENICILLIN USED BY INHALATION

by FRANCIS X. STURNER, Chief Pharmacist

BUFFALO GENERAL HOSPITAL, BUFFALO, N. Y.

IN the wake of a number of papers on the treatment of specific diseases by vapor inhalations of penicillin, this article is offered to bring to the pharmacist information and material for providing physicians with facilities for such treatments as may be deemed desirable.*

Penicillin-susceptible respiratory diseases have been treated in this manner, and a great many successfully. However, when anything beyond a purely local effect is sought, the factor of blood levels, to assure adequate absorption of the penicillin, must be considered to determine whether or not a therapeutic level is being obtained.

Since there is evidence that staphylococci and perhaps other bacteria are vulnerable to penicillin only when dividing and may be unaffected during periods of dormancy, when they are not dividing, it was decided to administer the vapors periodically, once an hour for 12 applications.

This presumably covered the entire division cycle of the bacteria and was considered a day's treatment. In serious and acute illnesses the treatment was administered daily, but in chronic cases it was observed that a day in between treatments was effective. This was determined by observations of the patient's progress and comfort, temperature reactions and general tolerance of the drug and treatment. The patient usually is very cooperative and rather enjoys the experience since he may manage the procedure himself either in the hospital or at home.

Materials needed for preparation of the medication are: vials of penicillin of necessary strength, sterile 10-cc. syringe and needles, bacterial filter,

50-cc. and 100-cc. rubber-capped vials for diluent, sterile dropper bottles for dispensing under certain conditions, solution of epinephrine hydrochloride 1:1000, injectable water and normal saline solution.

Preparation of Medication

In selecting the diluent for the penicillin, close observation of patients led to the proper types to be used according to certain conditions. Cases which presented a very copious amount of mucus, as in bronchiectasis, reacted best to a solution we will call "A," and cases which had a less copious secretion of mucus, or were even dry, reacted best to a solution we will call "B." Cases which presented a normal amount of mucus but which were being treated for other lung diseases such as abscess, empyema, etc., were treated with solution "B." The formulas for these solutions follow:

SOLUTION "A"

Solution epinephrine hydrochloride,	
1:1000.....	2 cc.
Triple distilled water, q. s.....	100 cc.

SOLUTION "B"

Solution epinephrine hydrochloride,	
1:1000.....	2 cc.
Solution normal saline.....	50 cc.
Triple distilled water, q. s.	100 cc.

Both solutions represent epinephrine hydrochloride in sufficient amount to clear the respiratory passages and add a prolonging effect to the penicillin without producing the therapeutic effect of epinephrine.

These solutions, when prepared, should be

* The use of penicillin by inhalation was started at the Buffalo General Hospital in collaboration with Dr. Henry Field, Jr., in February, 1945.

handled with sterile technique. After preparation they should be filtered through a bacterial filter, or sterilized in a pressure cooker, and filled into sterile rubber-capped vials.

Even though these solutions are not to be injected, the above procedure assures complete protection to the patient. Any amount of diluent may be withdrawn from the rubber-capped vials as needed, with the sterile 10-cc. syringe and dilutions made for dispensing. Where a hypodermic syringe and needle will be available for the withdrawal of the solution at the time of use, it is recommended that the solution of penicillin be dispensed in its original rubber-capped vial. However, if this is not possible or practical it should be transferred to a sterilized dropper bottle, with instructions on the label concerning the amount to be added by dropper to the diluent. There should be a minimum amount of contact to prevent contamination.

Preferable dilution strengths are a matter of opinion. In our studies we found 10,000 units of penicillin per cubic centimeter of sufficient strength to produce local effects. This, however, is the province of the physician and his

avoid transmitting an infection from a previous user.*

When ready to start the treatment, 1 cc. of the penicillin solution is placed in the vaporizer (A—see diagram) which is then inserted into the nasal mask (B). Then the patient applies and holds the mask securely to his face. By pressing valve (C) only when inhaling, and releasing it when exhaling through the mouth, vaporization takes place only when the vapor is actually being taken into the lungs. This avoids unnecessary condensation of the mist through blocking of the flow.

Nasal inhalation was chosen rather than the oral method because there is less area of turbulence. Turbulence in the nasal method occurs only at the glottis instead of in the entire oral cavity. There is also a better chance to reach nasal and sinus infections in this manner. This procedure is repeated every hour for the eleven-hour period, which comprises a total of twelve treatments of about five minutes each.

After the last inhalation for the day, the vaporizer should be removed and rinsed thoroughly in lukewarm water to remove any residue

of the penicillin solution. If allowed to remain, a hard fungus-like substance forms in the small jets, which renders it useless. However, should this happen, place a few drops of hydrochloric acid in the vaporizer and blow through it to dissolve and remove the obstruction.

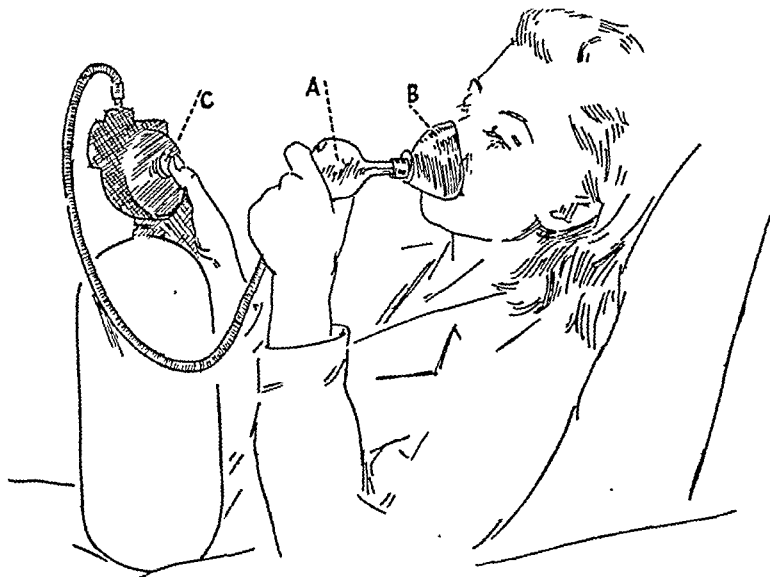
The apparatus† as used is set for 6 liters of oxygen per minute. The small tank, which is refillable, will last the day's treatment. The masks are inexpensive and therefore

are disposable with no need for reclaiming and sterilization. The vaporizers†† are more costly, and therefore should be loaned to the patient and charged to him if broken or damaged. The entire unit is designed and assembled so that it can be rented by the day at a specified rate.

* A solution recommended for this purpose is Aro-Brom in a 5% dilution for thirty minutes.

† Distributed by Greene & Kellogg, Inc., 165 Ashland Avenue, Buffalo, N. Y.

†† Distributed by Vaponefrin Company, 6812 Market Street, Upper Darby, Pa.



duty to decide. Dilutions less than 10,000 units per cubic centimeter are not recommended at this institution.

Methods of Administration

The apparatus needed for administration of the penicillin vapor consists of a cylinder of oxygen, a regulator, tubing, vaporizer and nasal mask. Upon return, the tubing and vaporizer should be dispensed again only after being sterilized, to

General Comments

The simplicity and ease of administration of penicillin by this method are its best recommendation. The application is painless and may be used, at the discretion of the physician, for any of the conditions indicated.

The low cost of the equipment makes rentals inexpensive to the patient and may at the same time be profitable to the institution or retail pharmacist. Replacement parts are also available at low cost.

The range of diseases for this treatment is wide. But aside from local application for respiratory infections, all systemic results should be gauged by rates of absorption into the bloodstream.

The clinical results of local treatment will best indicate the length of time necessary to complete a course of treatments. Sputum tests should be taken at intervals to ascertain progress or improvement. Whenever possible, x-ray photographs of the lungs should be taken, in the diseases where indicated, before and after treatment over a two-week period. The entire procedure must of course be directed by a physician.

Treatment by penicillin vapor, or mist, offers to the pharmacist and physician a new opportunity for cooperation either in hospital or general practice. Properly used and controlled it can be advantageous to the patient, the physician and the pharmacist. On all three depends the success of the treatment, which we hope will encourage and reveal other progressive and helpful adaptations of this remarkable drug.

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—R—

Twenty-eight pharmacists of *Perth Amboy, N. J.*, contributed \$1560 as a community service to cover the cost of one of the new rooms at the *Perth Amboy General Hospital*

JOINT PROGRAM ADOPTED TO AVOID TROPICAL ILLS IN U. S.

All possible precautions against introduction of new tropical diseases into this country through deployment of troops will be taken by means of a joint military quarantine program of the Army, Navy and U. S. Public Health Service.

Immunization, high standards of sanitation and other precautionary measures will also help to minimize the danger, Col. O. R. McCoy, director of the Tropical Disease Control Division in the Office of the Surgeon General, announces.

To reduce the number of secondary cases of malaria, all soldiers taking suppressive treatment for malaria when they return to this country are required to continue to take the drug for twenty-eight days after their return. Dengue, sandfly fever and scrub typhus offer little hazard as these diseases are limited in their course and do not recur.

It has also been found that the incidence of carriers of bacillary dysentery are "extremely low" in military personnel, and that the chances of transmitting filariasis in the United States are "very slight."

Troops are examined before departure from abroad and after arrival in this country to screen out any who have acquired communicable diseases. New regulations are also aimed at preventing introduction of disease through infected animals, plants or insects.

SPANISH HONOR E. F. COOK

Honorary membership in the Spanish Royal Academy of Pharmacy of Madrid has been conferred on Prof. E. Fullerton Cook of Philadelphia, chairman of the U. S. P. Revision Committee. Presentation of the membership certificate and a decoration was made through the Spanish government following a dinner held at its Embassy in Washington.

PHARMACIST WILL HEAD HOSPITAL

Leon N. Hickernell, pharmacist, has been named director of the University Hospital, Augusta, Ga. At one time Mr. Hickernell was chief pharmacist and head of the purchasing department at Cleveland City Hospital, later serving as assistant director. More recently he was employed as first assistant director of the New Haven Unit of Grace-New Haven (Conn.) Community Hospital.

PREScription *Information* SERVICE

SUBMIT YOUR PROFESSIONAL PROBLEMS TO THIS JOURNAL, 2215 CONSTITUTION AVE., WASHINGTON 7, D. C., GIVING ALL PERTINENT DETAILS. SERVICE TO READERS IS PROVIDED BY THE A. PH. A. LIBRARY AND TECHNICAL STAFF AND THE FOLLOWING CONSULTING BOARD OF PHARMACEUTICAL SPECIALISTS:

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SOLUTION OF EPHEDRINE

What is the procedure in filling the following prescription?

Ephedrine alk..... 1%
Gluconic acid, q. s.
Isotonic dextrose sol..... 5i
—R. D., New York

Evidently the physician wished to have a gluconate salt of ephedrine prepared, or he may have believed that the salt of ephedrine was necessary to obtain solution. The latter, however, is not the case since ephedrine alkaloid is quite soluble in water. Therefore, if it is possible to contact the physician, it would be wise to learn just what he wished in this respect. If the salt is to be prepared, one would use approximately equal quantities of gluconic acid and ephedrine. Isotonic dextrose solution would contain about 5 1/2% of dextrose. The Pharmacopoeia does not offer a solution of definite strength as far as dextrose is concerned, simply recognizing solutions of any strength by a general monograph.

COLOR FOR PRESCRIPTION

Please offer suggestions for the compounding of the following prescription:

Powdered extract cascarrine . gr. 1/2
Menthol..... gr. 3/4
Sodium citrate..... gr. 20
Beechwood creosote..... ʒ 8
Honey.....
Glycerin aa..... 5 2
Oil eucalyptus..... ʒ 5
Syrup wild cherry, q. s. ad..... 5 1

It has been requested that this prescription be dispensed with a red color. Our difficulty is with coloring, which seems to be the cause of a sediment and separation.—J. S., Washington

Solution of Amaranth U. S. P. seems to provide a satisfactory color for your prescription. There is, however, a slight separation of material at the surface of the prescription which is apparently oil of eucalyptus, or possibly the oil mixed with menthol and creosote. This material is not entirely soluble in an aqueous mixture and naturally will separate, but it mixes readily upon shaking. We find no further incompatibility and no essential difference between the prescription containing the Solution of Amaranth and one without it, except as to color.

PREPARING STERILE OINTMENT

Where can I obtain the ingredients for the following formula in sterilized condition, or how does one go about sterilizing the ingredients?

Lanolin, sterile..... 47
Cold cream, sterile..... 47
Sulfanilamide, sterile..... 6

—A. K., New York

This formula can only be conveniently prepared by aseptic manipulation. The ingredients are sterilized separately, compounded aseptically and dispensed in a sterile container.

The sulfanilamide powder can be purchased already sterilized, or it can be sterilized in a hot-air oven at 140° C. to 150° C. for four hours.

The lanolin and cold cream can be sterilized in a hot-air oven at 160° C. for one hour. This may affect slightly the lanolin in that its color will be

darker and there will be a change in consistency, both of which may not be objectionable. If some change will not be acceptable, 140° C. for four hours will have to be tried. The sterile container is sterilized in a hot-air sterilizer at 160° C. for at least one hour. The preparation is prepared by aseptic manipulation and preferably dispensed in lined collapsible tubes. If dispensed in an ointment jar, the sterility may be affected when the latter is opened.

Additional information concerning the sterilization of the sulfanilamide powder and the process of aseptic manipulation may be found on pages 275, 331 and 344 of "Bacteriology and Allied Subjects" by Louis Gershenfeld, published by the Mack Publishing Company, Easton, Pa. (\$6).

INKS FOR WRITING ON METALS

Could you furnish me with a formula for an ink for writing on metals?—J. S., Illinois

An ink suitable for writing on metal, glass or celluloid is prepared as follows:

Dissolve 20 parts of rosin in 150 parts of alcohol and add the resulting solution drop by drop, with continuous stirring, to a solution of 35 parts of sodium borate in 250 parts of water. Finally dissolve sufficient methylene blue to obtain the desired tint.

An indelible ink for glass or metal, recommended by Schobel, is as follows:

Sodium silicate, 1 to 2 parts; liquid India ink, 1 part; water as needed.

If a white ink is desired instead of black, the following has been suggested:

Sodium silicate, 3 to 4 parts; Chinese white or barium sulfate, 1 part; water as needed.

Containers for the inks should be kept airtight

SULFATHIAZOLE HYDROLYZED

In compounding the following prescription a yellow coloration was observed after several days. This yellow color was due to the addition of sodium sulfathiazole. What is the nature of the reaction? Is the quality of the medication impaired by the color change?

Sodium sulfathiazole.....	10.0%
Antipyrine.....	5.0%
Benzocaine.....	0.5%
Glycerin, q. s. ad.....	100.0

—A. B., Wyoming

The yellow color of this prescription is undoubtedly due to hydrolysis of the sodium sulfathiazole. The sodium salts of the various sulfonamides are not permanent in solution and should only be prepared in this form for immediate use. The decomposition of the material would, of course, be expected to render the preparation inert as far as this specific drug is concerned. The preparation of smaller

quantities might be satisfactory in this case, and storage in a cool place protected from light would help to retard hydrolysis.

SCHAMBERG'S LOTION

What is the formula for Schamburg's Lotion?—W. G., California

"Schamberg's Lotion" no doubt originated with a Dr. Schamberg of Philadelphia, noted dermatologist who died many years ago. He formulated many lotions, some for application to the body for various conditions and others for use on the hair and scalp. One of his best known formulas, which is possibly the one intended, was also known as "Calmitan Lotion." It is prepared as follows:

SOLUTION NO. 1

Sodium phenolate.....	8 Gm.
Sodium baborate.....	8 Gm.
Triethanolamine.....	6 cc.
Distilled water, q. s. ad.....	200 cc.

Make a solution, using heat if necessary.

SOLUTION NO. 2

Oleic acid.....	16 cc.
Light liquid petrolatum.....	170 cc.

Mix the two solutions thoroughly until emulsified; add two drops of oil of bergamot and one drop of oil of lemon to each four ounces.

HOMOEOPATHIC DRUGS

Please advise what Homœopathic Pharmacopœias are available and where these can be obtained.—M. D., Canada

The official Homœopathic Pharmacopœia of the United States is published under the direction of the Committee on Pharmacopœia of the American Institute of Homœopathy. It is available at \$6 from the printer, Otis Clapp and Son, Inc., 439 Boylston Street, Boston, Massachusetts. The first supplement to the current edition is available at \$0.50.

INFORMATION ON BENTONITE

Please advise us where we may obtain additional information on bentonite.—B. M., North Carolina

Past issues of THIS JOURNAL contained extensive discussions of the pharmaceutical use of bentonite as follows: Fantus, 27: 878, 1938; Fantus, 28: 548, 1939; and Hubbard and Freeman, *Prac. Phar. Ed.*, 2: 78, 1941.

Announcing . . .



ANTISPASMODIC • ADSORBENT • SEDATIVE

Remember the name LUSYN—a rational new application of three distinct components which successfully complement the action of each other, both pharmacologically and therapeutically. Just developed in the research laboratories of the Maltbie Chemical Company, LUSYN is now being widely detailed and advertised to physicians throughout the country.

LUSYN is *highly effective*, yet *non-toxic* in recommended dosage. Its clinical efficacy lies in the fact that it uniquely combines three different pharmacological actions:

- 1 The homatropine methylbromide content *relieves gastrointestinal spasm* without unpleasant side-effects.
- 2 Its phenobarbital content aids in providing *central sedation*, thus helping to control the psychogenic factor.
- 3 The alukalin in LUSYN is a potent *antacid and adsorbent*, and *tends to reduce irritability and add bulk*.

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The Maltbie Chemical Company • Newark, New Jersey

LUSYN

Typical Days

From the Secretary's Diary for November

—3rd—

BY TRAIN at 7 a. m. to Trenton, N. J., to meet Swain and Schaefer coming from New York, and then all by auto to Atlantic City where Dunning was sojourning at the Claridge. Here a five-hour meeting of the Finance Committee at which budget proposals were defended with facts and figures. The final recommendations to be made to the Council next week will constitute an all-time high for A. Ph. A. anticipated income and expenditures, auguring well for a busy and fruitful year ahead.

—4th—

A Sunday devoted largely to meetings of the Trustees and House of Delegates of the New Jersey Pharmaceutical Association, and then the trip back to Washington. It is good to keep in touch with the problems of a typical state association while concentrating on national association affairs, for the events and thinking at the grass roots are the stuff of which national policies are made.

—5th—

All day and far into the night laboring with the staff on the heavy Monday mail, the agenda for the coming joint meeting of A. Ph. A. and N. A. R. D. executive bodies, and the review of last minute reports of state pharmaceutical association resolutions and presidential recommendations.

—6th—

Today came President Moulton and Council Chairman Beal to go over reports and unfinished business in preparation for the Council meetings which start tomorrow. Later a meeting with Harvey Mack and Cy Fleck of the Mack Printing Company to review printing problems and mounting costs of preparation and distribution of the National Formulary and the JOURNALS. And the staff is all a-bustle in anticipation of the visit to our headquarters, for the next few days, of members of the Council from the various parts of the country.

—7th—

Today the start of an eventful four-day round of

meetings with all but two members of the Council in attendance. Much of the morning devoted to listening to the interesting report of President Moulton on his Puerto Rico trip, and its resultant good will. Our territorial associates would have been greatly pleased to note George Moulton's effort to re-create the semitropical atmosphere for the occasion. The charts and photographs illustrating the itinerary and the warmth of the reception accorded were most complete.

After a buffet luncheon in our own quarters came long and earnest consideration of the ASSOCIATION's future in the light of the recommendations of the Finance Committee with unanimous approval of the recommendations. Also approval of long range plans for the publications, the sections and the branches, all of which will serve to improve integration and efficiency.

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All this day with the Council, carefully reviewing the agenda for the joint meeting to be held tomorrow with the N. A. R. D. Executive Committee. Just before the noon recess there came Prof. Lynch of Temple University with pharmacy students William Spring and Leonard Russock, and Messrs. Rogers and Green of Wyeth, Inc., to sit briefly with the Council and note how the business of the ASSOCIATION is transacted. These students had won an intramural pharmacy week window display contest at Temple University College of Pharmacy. The prize was a visit to Washington, and we were glad to welcome them.

At six o'clock to the Statler Hotel for a joint dinner of the Council with the executive committee of the Association of Colleges of Pharmacy who were also in session in Washington these days. A good talk by Col. John M. Andrews of the National Selective Service Administration telling why pharmacy students cannot be deferred just now. Later, until midnight discussing problems of mutual interest in the field of pharmaceutical education on a long agenda.

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A very profitable day spent in a well-conducted joint session of the A. Ph. A. Council and N. A. R. D. Executive Committee with George Beal presiding, and very little of importance to pharmacy in any of its phases omitted in the discussions. Then laboring far into the night with Swain, Christianson, Waller and Sonnedecker to formulate the resolutions



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which gave formal expression to the views of the Joint Conference

—10th—

Now came the final session of the Council with careful review of Committee and Section reports submitted by mail and much business transacted to keep the fires burning until the membership can meet once more in annual convention.

Late in the afternoon a visit from Al Fritz of Indiana and Frank Moudry of Minnesota who had never been within the walls of the AMERICAN INSTITUTE OF PHARMACY, and found them, like many others, agreeably surprised at what they saw. Next a visit from Dean Lyman, one of pharmacy's most lovable characters and one who has created his own monument, the *American Journal of Pharmaceutical Education*.

—11th—

Breaking the Sabbath in Washington to expedite the dissemination of the results of the previous week's important meetings.

—14th—

All the morning in conference with members of the A. M. A. Council on Pharmacy and Chemistry at the Statler on problems involving more complete use of the metric system. Pooling information and experience with physicians Torald Sollman, Austin Smith, R. P. Herwick, Stuart Mudd and James P.

Leake were pharmacists J. L. Powers, E. F. Cook and R. P. Fischelis, and there was fine agreement all around on a forward-looking program to extend the use of the metric system in formula and prescription writing. At lunch, and later, there was time also to discuss the ever troublesome question of trade-marked names for common drugs.

—16th—

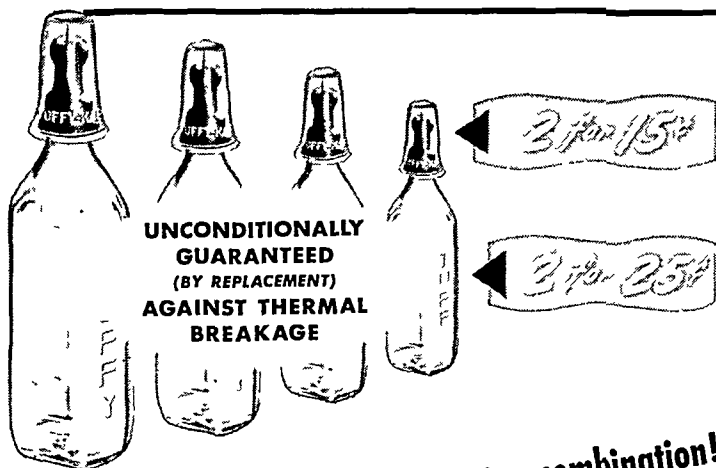
This morning came Dr. Hugh Cummings and Dr. Moll of Pan American Union's Medical Division to explore the possibility of using space in our building for some of their expanding activities, but we were sorry to point out our own increasing need for every inch of available floor space. Next a conference with Margaret Klem of the Social Security Board and Dr. Burt who is gathering data on medical care plans for us.

—17th and 18th—

Taking advantage of the week end free from telephone and other interruptions to catch up on necessary reading and writing. There is nothing like a quiet day for the planning of projects which have been in abeyance. Also work on the allocation of space for important activities which loom ahead, such as the membership drive and the enlarged publications

—19th—

A day of mixed activity, with attention (*cont'd p 50*)



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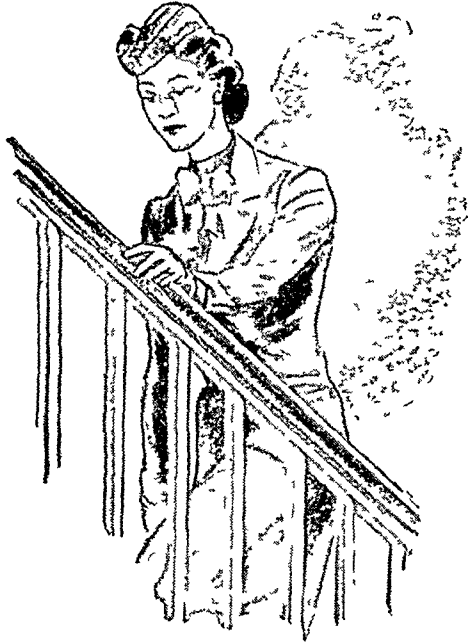


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Each fluidounce of Livitamin presents:

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Thiamine Hydrochloride (B ₁).....	3 mg.
Riboflavin (B ₂ , G).....	1 mg.
Nicotinamide (Niacinamide).....	25 mg.
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Contains the vitamin B complex factors naturally occurring in liver and rice bran, fortified with synthetic B₁, niacinamide, B₂, B₆, pantothenic acid and with iron and manganese.

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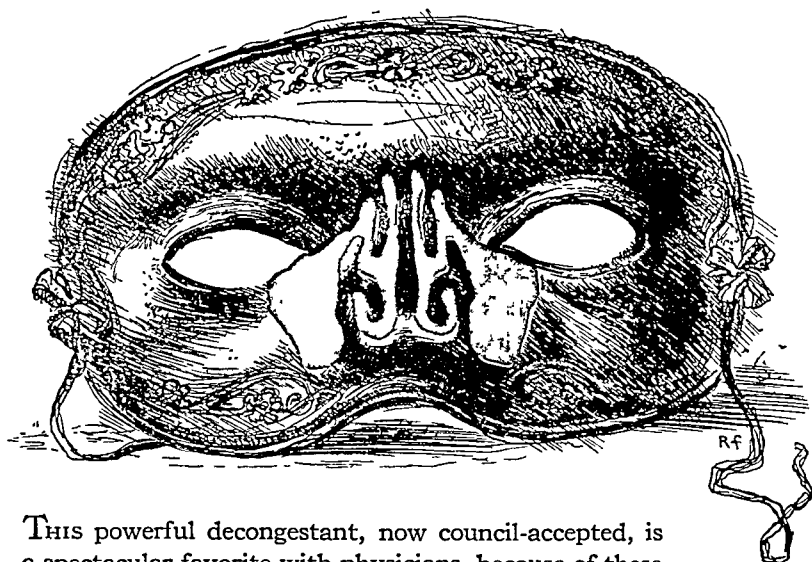
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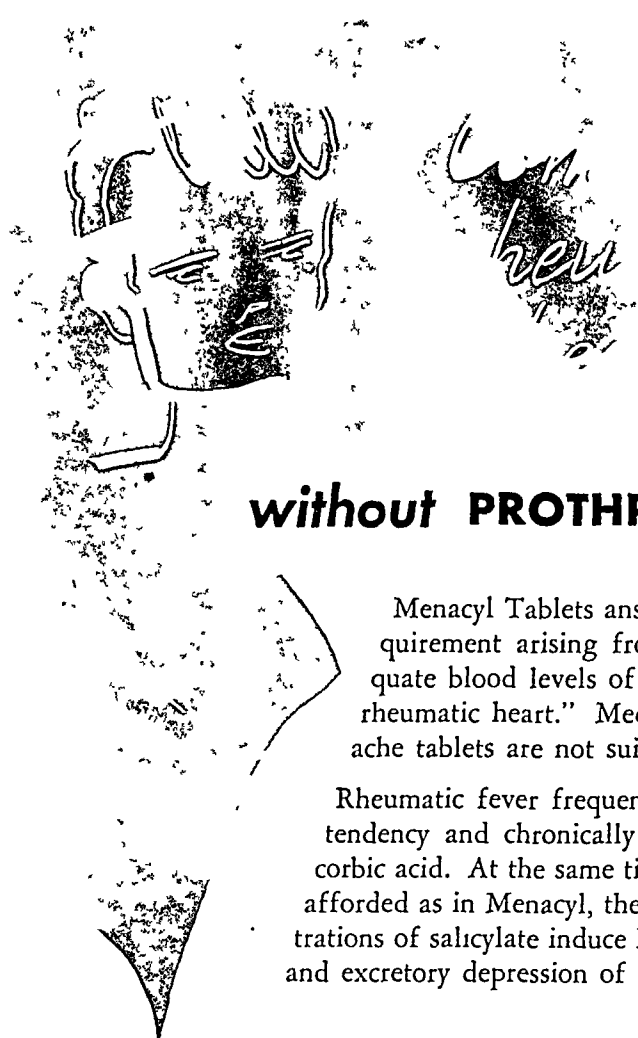
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LAKESIDE LABORATORIES, *Milwaukee 1, Wisconsin*

MENACYL *tablets*

to the receipt of furniture and fixtures for the lounge planned for our girls. In the day's many long distance calls there was one from Fred Lascoff in New York telling of the serious penicillin shortage, and we have worked hard with C. P. A. and other authorities to keep the flow of parenteral penicillin uninterrupted. This day also a most friendly letter from Grover Beard who has labored incessantly in behalf of North Carolina pharmacy these many years.

—20th and 21st—

Great diligence on the part of all to clear the desks and work ahead in anticipation of the Thanksgiving holiday which this year includes Friday because there was unanimous decision to work on holidays earlier in the month so that a long week end could be enjoyed by all.

—26th—

Back in Washington after several days of rest and recreation and finding the mail unusually heavy but filled with reports from far and wide on correspondence with the U. S. Civil Service Commission on the matter of adequate standards for admission to the pharmacists' examination.

Late in the morning to the office of Gen. Omar Bradley with George Frates to offer the cooperation of pharmaceutical organizations in looking after the problems of returning veterans. Sitting at the desk with this four-star General, hero of many a tough campaign in the world war just completed, one receives the impression that here is a man who knows where he is going and will guide the destinies of the Veterans' Administration with great capability.

—27th—

And still the letters come from irate deans and state secretaries enclosing replies from Senators and Representatives who thoroughly agree that the U. S. Civil Service Commission has missed the boat in establishing requirements for government pharmacists. A visit with Adley Nichols who came to look over U. S. P. material stored here and now to be removed to the Pharmacopoeia's own recently purchased headquarters in Philadelphia.

—28th and 29th—

A busy morning at the office and then by the noon train to Newark, N. J., and from there via Lackawanna to Binghamton, N. Y., to be met by Mel Eaton of Norwich and Eaton Laboratories. The forty-mile drive from there to Norwich was quickly over, for there was much talk of the men and things associated with old "Medico-Chi" in Philadelphia where we were students "some" years ago. After a pleasant night and breakfast at Mel's magnificent home, early to the Norwich Laboratories to meet Maj. McCartney and many members of the research, control and production staff.

The tour of the laboratories, production line and warehouses proved unusually interesting. At luncheon with the executive staff there was much conversation on recent developments in medical care distribution and the new Eaton Laboratories' specialties now undergoing final clinical trial. Later some talk about industry cooperation in the program

of the AMERICAN PHARMACEUTICAL ASSOCIATION and then the forty-mile drive to Utica over an icy and treacherous highway, but the man at the wheel was very skillful at his job and so we arrived in time for the advance Empire State express to Albany.

Here came Dean O'Brien of the Albany College of Pharmacy to greet and transport us to the DeWitt-Clinton Hotel where there was opportunity for brief conversation with Secretary Jayne of the New York Board of Pharmacy on problems of mutual interest, especially barbiturate regulations. Then to Jack's restaurant where the Albany County Pharmaceutical Association had arranged a splendid dinner with the Albany County Medical Society as guest. There was a magnificent turnout of the two professions and they received the suggestions for cooperative effort in improving professional relations with enthusiasm.

Other speakers were President Wallingford of the Albany County Medical Society, Secretary Hannon of the New York State Medical Association, Commissioner Conroe of the State Department of Education, and President Cheris of the Albany County Pharmaceutical Association and Secretary Jayne of the New York Board of Pharmacy. Dean O'Brien was the gracious toastmaster.

While the festivities were in progress the up-state snowstorm reached Albany and on the way to the hotel it was necessary to plow through many inches of snow. A final chat with Dean O'Brien on educational matters and one cannot help but feel that there is splendid progress ahead for the Albany College of Pharmacy under his capable direction.

—30th—

Early to the New York Central depot to board a 7:50 a. m. train which did not arrive until 8:45 and thoroughly enjoyed seeing the snow-covered trees on the hills along the majestic Hudson as we sped toward New York. One never makes this trip in daylight, passing the great Palisades, without remembering the biblical reference to the eternal hills.

ALABAMA ALLIED HEALTH COUNCIL HOLDS CONFERENCE

The Allied Health Council of Alabama, which the Alabama Pharmaceutical Association helped organize, held a conference in Birmingham on November 27-28 devoted to discussions of the state's health status and methods of improving it. Represented on the program were both state and national health authorities.

Mrs. Thelma Morris Coburn, secretary of the Alabama Pharmaceutical Association, serves as secretary-treasurer of the Health Council, which includes medicine, dentistry, pharmacy, nursing and hospital services. E. W. Gibbs, Birmingham pharmacist, is a member of the executive board.

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INTRODUCTION OF NEW DRUGS

THE joint report on thiouracil by pharmaceutical manufacturers and the Food and Drug Administration, reproduced elsewhere in this issue, represents a significant and welcome development in the method of introducing new drugs.

Like many new drugs, thiouracil is not only more effective but also more toxic and difficult to administer properly than most time-honored remedies on the pharmacist's shelves. Release of thiouracil for general use against hyperthyroidism was justifiably delayed for some time because of fears of too frequent toxic reactions.

Some of us are impatient when new drugs do not immediately become available after promising clinical trials have been widely publicized. But are we willing to share with physicians the responsibility for proper dosage, and for possibly tragic untoward reactions, by dispensing new drugs before a solid foundation of clinical experimentation has been established?

It can hardly be questioned that the release of new drugs must sometimes be delayed unduly because clinical investigations are not sufficiently coordinated; because the results of independent investigations sponsored by competing manufacturers too often are not correlated for the benefit of all. The new Therapeutic Trials Committee established by the American Medical Association has an excellent opportunity to improve the coordination and planning of clinical trials. The joint report on thiouracil by manufacturers and the FDA points the way toward helpful correlation of data obtained.

In the case of thiouracil, each of 6 pharmaceutical manufacturers had submitted a new drug application to the FDA. Buried in these applications was evidence that much information on the safe administration of the drug was available but unreported. The FDA wisely brought the drug manufacturers together on a plan to pool their data and conduct a survey of results obtained by clinicians.

Here now was the basis on which the drug could be evaluated properly and released for general use. The remaining problem was to get this information on indications, dosage and precautions into the hands of physicians and pharmacists when the drug was released. At a conference held under

the auspices of the Food and Drug Administration, the medical directors of the pharmaceutical manufacturers and a representative of the American Medical Association agreed that the pooled data should be made available to the medical profession as a report to the A. M. A.'s Council on Pharmacy and Chemistry. We present the report for pharmacists through the cooperative arrangement between the Council on Pharmacy and Chemistry and the A. Ph. A. which brings Council reports and data on Council accepted products to you regularly in THIS JOURNAL.

This report, the first of its kind, marks a milestone in cooperation. We hope that thiouracil represents only the first instance of many in which information reported in new drug applications will be correlated and evaluated for use by physicians and pharmacists.

INFORMATION WANTED

IF properly applied, current labeling regulations of the FDA should

win general approval. Drugs suitable for lay use will be adequately labeled; drugs for prescription use only will be clearly identified as such. At the same time it must be recognized that the absence of directions and especially dosage statements on newer prescription drugs is not without disadvantages and even dangers.

Some physicians seem disposed to prescribe merely on the basis of partial or preliminary clinical information found somewhere in the literature. Some pharmacists are filling prescriptions for drugs regarding which they do not have adequate information, even though they must share responsibility with the physician for proper dosage and administration.

Modern medical practice requires critical selection from an expanding armamentarium of drugs and information on pharmacology, toxic side effects and the regimen of new types of therapy.

Pharmacists who recognize today's trends are aware of the need for such information in providing a competent prescription service, as they fill the role of adviser to physicians on the multitude of new medications, and in safeguarding the patient.

Less time spent in compounding should mean more time spent with professional journals and the manufacturing pharmacist's literature—in evaluating and filing, mentally and manually, information on new drugs.

The appearance of many unfamiliar and potent products bearing the prescription legend puts emphasis on a new, or at least greatly expanded, function of the retail pharmacist.

WORKING TOGETHER FOR BETTER PHARMACY

Sirs:

In remitting my dues for 1946 I want to indicate my support of the ASSOCIATION's activities . . . and to tell you what a good job I think you are doing.

I can think of no reason why a man would select a profession and then fail to do everything in his power to promote its best interests. Surely membership in the national association is the least that could be expected.

No doubt you are aware of the splendid work that Dr. L. David Hiner of Ohio State University has done in promoting A. Ph. A. to students there. No serious-minded pharmacist or pharmacy student could hear him tell of the ASSOCIATION's work, and its function in American pharmacy, and fail to become a member for life.

I joined while still a student . . . and am now engaged in retail pharmacy.
Dayton, O. ROBERT J. BIRMINGHAM

SOURCE OF TABLET AND CAPSULE MACHINES

Sirs:

Please give me the address of manufacturers of small tablet and capsule machines . . .
San Antonio, Texas VOLNEY M. PLATT

Two principal suppliers of small-scale tablet machines are the F. J. Stokes Machine Co., 6002 Tabor Rd., Philadelphia, and the Arthur Colton Co., Detroit, Mich. We have been unable to locate a source of small-scale capsule machines, although Sharp and Dohme, Philadelphia 1, formerly supplied such a unit. Can one of our readers help Mr. Platt?—THE EDITOR

NO DOSAGE ON PRESCRIPTION DRUGS

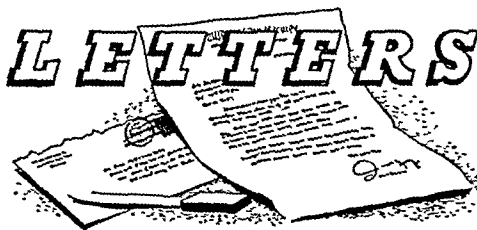
Sirs:

Does the new labeling regulation require manufacturers to put dosage on the bottle? If not, it should. We pharmacists, under the law, are liable for an overdose; in case the physician prescribes an overdose we are to check with him, else the liability is ours. Sometimes the physician is not available, and these preparations that are flooding the market have on the label: Pamphlets will be mailed on request. Now we pharmacists are familiar with drugs that are used to compile prescriptions but it would take a public librarian to keep track of all the proprietary preparations now in use. . . .

Having the dosage on the bottle would help, and I know manufacturers would benefit. Physicians often come into my prescription room looking for

something . . . that seems to fit the patient. Drugs labeled "write for pamphlet" are usually ignored. . . .
Williamstown, Ky. J. B. MILLER

Sorry; dosage is not permitted on drugs bearing the prescription legend. This is intended to aid the pharmacist by making a clear-cut distinction between preparations with directions, which may be dispensed over the counter, and those with the legend, which must be restricted to prescription. Moreover, for many potent drugs the average dose in itself does not assure safe or proper administration. Authorities and physicians assume that the pharmacist will have full knowledge of the drugs he dispenses through professional training and study of professional journals and manufacturer's literature.—THE EDITOR



CARNOY'S MODIFIED SOLUTION

Sirs:

In the PRACTICAL PHARMACY EDITION recently I noticed a reference to Carnoy's Modified Solution. While working in an Army hospital I was asked to supply this solution and, after looking everywhere, a physician in Seattle sent me the following formula which may be of interest.

Absolute ethyl alcohol	6
Chloroform	3
Glacial acetic acid	1
Ferric chloride	1

Redondo Beach, Calif.

AMOS M. PLANK

PHARMACY EMBLEMS FOR AUTOMOBILES

Sirs:

As a member of the A. Ph. A., I wonder if you would locate for me the source of pharmacy emblems to be attached to the license plates of automobiles? . . . It seems to me these were advertised at one time in your publications.

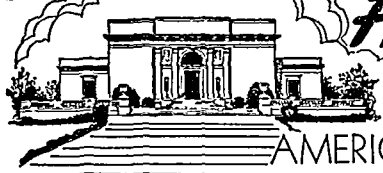
San Juan, P. R.

JESÚS D. DOMINGUEZ

Emblems of this type have been supplied by Bastian Brothers Co., Investment Bldg., Washington, D. C., but are available only in quantity for pharmaceutical groups.—THE EDITOR

This department is your pharmacy forum. Do you have something to say on current affairs in the profession . . . a question to be answered? Write to the Journal at 2215 Constitution Ave., N. W., Washington 7, D. C.

STRAIGHT



FROM HEADQUARTERS

by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

WE ARE rapidly approaching a show-down in the whole matter of veterans' employment, veterans' preference and the maintenance of adequate standards of service in the field of pharmacy. We have become accustomed to talking glibly about "taking care of the veteran" when he returns from military duty and presumably when we have been talking about taking care of him we have meant that he was to get his old job back, or that he was to be given preference for new jobs, or that he was to be given an opportunity to complete his education or to add to his education by graduate work or by some specialized training.

It can hardly be said that those who have been placing themselves on record as wanting to do something for the veteran have been giving lip service only, but it is undoubtedly true that many who have talked about veteran preference have done so without very much thinking or planning. Hence there will be occasions when individuals or concerns who have had every intention of looking after the interest of their veteran employees will find themselves in a somewhat difficult position because they have not planned properly, or perhaps had not expected the sudden influx of veterans brought about by the accelerated return of these men from their service posts.

Aptitude a Prime Essential

Our colleges of pharmacy, which have been complaining about the lack of students in the recent war years, suddenly find themselves overwhelmed in some instances, by large numbers of war veteran applicants to whom pharmacy was held out as a worth-while profession in the days preceding their separation from the Services. This situation requires considerable thoughtful planning, tactful administration, and sympathetic understanding.

In the first place, the pharmacy war veteran wants to come back to a profession which has gained rather than lost in prestige, in attractiveness, in better working schedules and emoluments and in opportunity for advancement.

The younger veteran who chooses pharmacy as his career without previous contact with the profession comes into it by way of the college of pharmacy. He has selected pharmacy because he has been told this profession offers unusual opportunities to the man or woman who aspires to a career of service to humanity as well as to a comfortable living.

The young men and women who have had several years of military service, now have the opportunity to obtain or complete a college education under very favorable conditions. As a matter of fact they can take chances on entering upon a college course, which they would ordinarily not attempt to do, because the government will pay their tuition and contribute toward their maintenance.

It is in the interest of the veteran, as well as in the interest of the profession and the public, which he will eventually serve, that high standards of practice as well as a high standard of admission be maintained, even though this may mean dropping some of these men and women from courses which they would like to pursue but which their scholastic record and aptitude tests definitely show they cannot pursue with profit.

It is neither a service to pharmacy nor to war veterans to load up a freshman class in a college of pharmacy with a group of students, who would ordinarily not qualify for admission to the pharmacy course, just because they are able to pay tuition and maintain themselves through government funds. If the colleges of pharmacy maintain established standards but fail to screen carefully all applicants for admission, they may find before the freshman year is over that a large percentage of veteran students may have to be dropped. Should this be the case, it would mean that considerable numbers of capable persons who are not veterans may have been denied the privilege of taking the pharmacy course and the profession itself may have been deprived of necessary capable personnel.

It is so much better to come to grips with this problem at the beginning and to employ the "ounce of prevention," rather than to complicate

the problem for the profession, the institution and the individual by promoting a false sense of service to the veteran.

The most important service we can render the veteran is to provide vocational guidance based upon established standards and a measurement of the aptitude and capability of the individual for the work he would like to do.

In pharmacy, as in other fields of endeavor, we are confronted with a lack of adequate data and information which would automatically provide guidance for all concerned. For example, there are very few states, if in fact there are any, which know definitely how many pharmacies are needed to provide the service that is essential for the civilian population. There is still a lack of information as to the number of pharmacists required to properly man existing pharmacies and supply personnel for other branches of the industry and profession. There is considerable lack of information on the degree of specialization that should be fostered in the undergraduate pharmacy course and the extent to which graduate instruction is needed or the direction which it ought to take.

All of this information was to be supplied by a series of surveys covering the industry and the profession, but these surveys have not yet materialized. They will not materialize until the profession and the industry, through one or more of their sources of financial aid, will inaugurate these surveys. Perhaps the most constructive proposal that has yet been made is that of the American Association of Colleges of Pharmacy which has endeavored to induce the American Foundation for Pharmaceutical Education to finance a general survey of pharmaceutical practice and pharmaceutical education. If such an over-all survey is ever to be made, now is the time to make it.

As a matter of fact it is already too late to benefit as completely as possible from such a survey unless it is divided into one phase covering immediate necessities, and a second phase covering long-range requirements. The entire profession and industry will be benefited if a survey covering basic information to meet immediate needs could be gotten under way at once. It is good news that the American Council on Education is willing to undertake such a survey and the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION is in hearty accord with the proposal.

War veterans do not want to be coddled, neither do they want to be fooled or be imposed upon. They deserve every proper consideration and advantage which will help to

make up for the time they had to take out of their normal lives to do their share of fighting the war at the battle fronts. However they do not ask, nor should they be granted any unfair advantage at the expense of jeopardizing quality of service and public safety. Any attempt to construe acts of Congress or of state legislatures contrary to the public interest under the guise of helping war veterans will be resented most by veterans themselves because they fought to preserve the American way of life, not to destroy it.

Civil Service Victory

THE passage of H.R. 4717 creating a Department of Medicine and Surgery in the Veterans Administration, with the proviso that appointments to the position of pharmacist shall be limited to those who hold the degree of bachelor of science in pharmacy or its equivalent and registration in one of the states or the District of Columbia, has caused the U. S. Civil Service Commission to cancel its recently announced examination for pharmacists. The cancellation became necessary because the Civil Service Commission had invited persons with no college training in pharmacy to apply for the examination, along with others who have had formal training.

It is gratifying to note this reversal of the previously announced policy of the Commission, since it is in line with the point of view we have tried to express and promote through these columns and in prolonged correspondence with the president of the Commission.

It is to be expected that action in favor of formal education as a prerequisite for pharmaceutical service in the government recorded by the Congress in this legislation constitutes notice to the U. S. Civil Service Commission that standards of admission to the practice of pharmacy in the government service must be on a level that is at least as high as the requirements for registration in 45 of the 48 states and the District of Columbia. The new requirements should not operate to prevent continuous employment or advancement of pharmacists now in the Civil Service who qualified on the basis of requirements previously in effect. Gen. Bradley, director of the Veterans Administration, and Gen. Hawley, who heads the Department of Medicine and Surgery, are to be congratulated on their successful campaign to reorganize medical services in the Veterans Administration and we appreciate especially their constructive attitude with respect to the development of pharmaceutical services on a high plane.

Iron Salts

IN NUTRITIONAL ANEMIA

by MELVIN W. GREEN

CHAIRMAN, COMMITTEE ON PHARMACEUTICAL RECIPE BOOK

ALTHOUGH anemia is a pathology that has been recognized for centuries, it is only in comparatively recent years that an adequate segregation of types of anemias has been accomplished. A gradual change in conception of the physiology of blood formation and the availability of new diagnostic methods have brought about this classification.

Basically, the anemias fall into two categories, anemia associated with blood loss or increased blood destruction, and anemia due to defective blood formation. Nutritional anemia falls largely into this latter category where there is a deficiency of iron due to an inadequate quantity of iron in the diet, a failure to utilize properly iron which is present or loss of iron by excessive hemorrhage. This anemia is also referred to as hypochromic microcytic anemia. The term, *hypochromic*, refers to the fact that there is a deficiency of hemoglobin in the individual cells even though there may be a normal number of cells present. Only hypochromic anemias (not hyperchromic and normochromic) respond to iron therapy. *Microcytic* means that the cells are smaller than normal.

Hematologists have developed ways of expressing these factors which, while somewhat empirical, are useful. To determine the average volume of an erythrocyte, a hematocrit is used. This instrument packs the red blood cells by centrifugation, and the volume of the packed layer is read from the instrument. The mean (average) corpuscular volume is determined as follows:

$$\frac{\text{Volume of packed cells}}{\text{per 100 cc. of blood}} \times 10 = \text{Mean corpuscular volume in cubic microns}$$

Erythrocytes in millions per c. mm.

The normal values for this volume are: 105 at

birth, falling rapidly to a childhood level of 87 to 73; adults 82 to 92. Thus, if the volume is greater than normal, the patient is said to have *macrocytosis*; if the volume is smaller than normal, the condition is called *microcytosis*, while the normal range is often spoken of as *normocytosis*.

The mean corpuscular hemoglobin may be calculated by use of the following formula:

$$\frac{\text{Hemoglobin in Gm.}}{\text{per 100 cc.}} \times 10 = \text{Mean corpuscular hemoglobin in micromicrograms}$$

Erythrocytes in millions per c. mm.

Less carefully standardized are the *volume index*, *color index* and *saturation index*. These indices compare the value found for the patient with the normal, but unfortunately too many different values for normals are used to permit easy interpretation of the results. These indices are as follows:

$$\text{Volume index} = \frac{\text{Mean corpuscular volume (patient)}}{\text{Mean corpuscular volume (normal)}}$$

$$\text{Color index} = \frac{\text{Per cent of normal hemoglobin concentration}}{\text{Per cent of normal erythrocyte count}}$$

$$\text{Saturation index} = \frac{\text{Mean corpuscular hemoglobin concentration (patient)}}{\text{Mean corpuscular hemoglobin concentration (normal)}}$$

Iron Requirements

Normal male adults would appear to need about 5 to 8 mg. of iron per day to keep in equilibrium. Women between the ages of puberty

and the menopause need about two to four times this quantity, Leverton and Roberts having shown a need for 16 to 17 mg. per day.

Although the average American diet contains from 10 to 20 mg. of iron, the failure to eat an adequate ferrigenous diet, absorption failures, pregnancy and other periods of stress contribute to a state of nutritional anemia. At such a time, the average diet is inadequate to increase hemoglobin formation, for to increase the hemoglobin level 1% requires 25 mg. of iron for its formation. Since absorption is often far from 100%, it is obviously advisable to supplement the diet with iron preparations during such periods.

Types of Iron Compounds

Both organic and inorganic salts of iron are available for use in medicine. For many years a controversy has raged over whether the inorganic salts or the organic salts were most effective.

It was at first believed, with little evidence,

utilization that these basic points are easily obscured. The tendency to use inadequate doses of iron and the failure to take into account the actual iron content of various compounds have also contributed to the confusion. Present evidence appears to indicate that all forms of iron, even the metal, are utilized to some extent, but that iron in a nonionic form and incapable of reacting with dipyrindyl is poorly absorbed.

Hahn and co-workers have studied this problem by the very effective and dramatic means of administering radioactive isotopic iron, Fe^{59} . In these studies it was shown that ferrous iron was definitely better absorbed than the ferric, when such "tagged" iron was fed to humans. In dogs, made anemic by bleeding, the same thing was found. It was shown also, by these experiments, that the individual response to a given dose of "tagged" iron is so variable that one cannot study the relative utilization of different iron preparations in different subjects, a fallacy neglected in many previous studies.



FERROUS SULFATE SYRUP will be in N. F. VIII as a new prescription formula.

that only the organic compounds and, in fact, only hemoglobin could be successfully absorbed and utilized in blood formation. Later, when it was unequivocally shown that inorganic compounds could be absorbed, attention was turned to the degree of absorption and utilization of organic *vs.* inorganic iron, and of ferrous *vs.* ferric iron.

So many factors influence iron absorption and

The use of "tagged" iron will no doubt modify many of our previous concepts regarding iron absorption, utilization and storage. Present conceptions, limited though they may be, indicate that iron is absorbed mainly in the duodenum and upper jejunum, and in progressively decreasing amounts in the remainder of the jejunum and the ileus. Probably no absorption takes place through the stomach, but the gastric

acidity contributes to making the iron soluble. A loss in acidity, if concomitant with a low iron intake, is detrimental to proper iron balance. The combined alkalinity, phosphate and protein content of the lower gut precludes absorption from this region.

Once the iron is absorbed, experience indicates that there is negligible excretion. The largest portion of the iron is in the erythrocytes as hemoglobin, but some nonhemoglobin iron exists in the erythrocytes also. In addition, some iron is found circulating in the plasma. About 7% of the body iron is present in the muscles as muscle-hemoglobin iron. Most of the remainder of the iron is stored in the viscera, especially in the liver and spleen.

Parenteral Administration of Iron

The intramuscular injection of iron is certainly the only permissible method of parenteral administration. Even this use is open to a great deal of question. Certainly no salt of iron capable of precipitating protein should be used. This would limit the choice largely to green iron and ammonium citrate and ferrous gluconate, the latter probably being preferred. In the presence of severe diarrhea or resection of part of the intestine, such therapy might be needed for a short time.

The cost of therapy and the pain and other dangers pursuant to intramuscular injection offset any gains. The situation is adequately sum-

marized by Heath and Patek [*Med.*, 16:267, 1937], who state, "The authors have not as yet observed a single case in which iron given by injection succeeded in promoting blood formation when by mouth it failed to do so."

The following is a list of some of the important iron preparations and their properties:

REDUCED IRON, U. S. P.—Since reduced iron is iron in the metallic state, it obviously depends upon the hydrochloric acid of the stomach for its conversion into the soluble state. Consequently this form is inadequate in the presence of achlorhydria. In the presence of normal gastric acidity it appears to be absorbed as well as ferrous salts.

Obviously it can be dispensed in capsules, tablets and pills only. In moderately severe anemia, it is usually given in doses of 1 to 1.5 Gm. two or three times daily. After the patient's blood level has returned to normal, a maintenance dose of about half to a third of this amount is sufficient, if maintenance therapy is necessary.

IRON AND AMMONIUM CITRATE, U. S. P.—This ferric salt contains nonionic iron, and hence does not cause protein precipitation. It is nearly neutral in reaction and contains 16.5 to 18.5% of Fe. It is very soluble in water, but insoluble in alcohol. The usual dose is 1 Gm.

GREEN IRON AND AMMONIUM CITRATE, U. S. P.—Green ferric ammonium citrate is a water-soluble compound containing 14.5 to 16% of iron and designed especially for parenteral administration. The iron in this

RELATIVE EFFICIENCY OF VARIOUS IRON COMPOUNDS*

COMPOUND USED	DAILY IRON DOSAGE, GM.	NUMBER OF DOSES	AVERAGE DAILY HEMOGLOBIN RISE, %	UTILIZATION OF IRON, %
Ferrous sulfate	0.180	12	1.175	15.70
" "	0.120	3	0.650	13.00
Fe ammonium citrate	1.215	30	1.270	2.50
" " "	1.215	3	1.030	2.03
Ferrous carbonate	0.110	6	0.96	20.80
" "	0.110	3	0.520	11.30
" "	0.220	8	0.803	8.80
" "	0.220	1	0.180	1.96
" "	0.330	10	1.125	8.18
" "	0.330	3	0.940	6.84
Ferrous chloride	0.132-0.198	4	1.420	20.70
" "	0.132-0.198	3	1.000	14.50
Ferrous gluconate	0.108	1	1.550	37.50
" "	0.108	5	1.230	29.00
" "	0.216	2	1.240	17.25

* After Reznikoff and Goebel [*J. Clin. Invest.*, 16:547, 1937].

compound has about the same availability as that of the garnet-colored scales of iron and ammonium citrate.

The greatest disadvantage to its parenteral use is the pain associated with the injection site. It is given in doses of 60 mg., the maximum permissive dose being 100 mg.

FERROUS SULFATE, U. S. P.—Ferrous sulfate is freely soluble in water and insoluble in alcohol. It contains about 20% of Fe. While ferrous sulfate is utilized more efficiently than some of the ferric complexes, its ability to liberate sulfuric acid upon hydrolysis and to precipitate protein gives it undesirable, irritating qualities.

The National Formulary has admitted a formula into N. F. VIII for making Ferrous Sulfate Syrup. This formula is a modification of one originating with Donald A. Clarke, a prominent hospital pharmacist. It contains about 0.32 Gm. of ferrous sulfate per dose. The ingredients are readily available, and it can be made easily by the pharmacist:

FERROUS SULFATE SYRUP

Ferrous sulfate.....	40 Gm.
Citric acid.....	2.1 Gm.
Peppermint spirit.....	2 cc.
Sucrose.....	825 Gm.
Distilled water, q. s.	
To make.....	1000 cc.

Dissolve the ferrous sulfate, the citric acid, the peppermint spirit, and 200 Gm. of sucrose in 450 cc. of distilled water; and filter the solution until clear. Then dissolve the remainder of the sucrose in the clear filtrate, add sufficient distilled water to make 1000 cc., and, if necessary, strain through a pledget of cotton.

Average Dose—8 cc. (2 fluid drachms).

SACCHARATED FERROUS CARBONATE, N. F.—This compound is another source of inorganic iron. It has the disadvantage of the need for a very large dose, however. Modern therapy calls for the use of 2 to 4 Gm. of ferrous carbonate daily, and since this compound contains but 15% ferrous carbonate, the bulk becomes prohibitive.

FERROUS GLUCONATE.*—Ferrous gluconate, introduced into medicine by Reznikoff and Goebel [*J. Pharm.*, 59:182, 1937, *J. Clin. Invest.*, 16:547, 1937], appears to be the most promising of the recently introduced National Formulary iron products. One of its chief

advantages lies in its freedom from irritating properties. This is due to the fact that it does not precipitate proteins nor liberate strong acids by hydrolysis. It is very stable in the solid state, and its solutions are stable when sealed in ampuls. Its parenteral administration appears to be free from irritation. The table from Reznikoff and Goebel, on page 58, shows the comparative utilization of several iron compounds in humans. The variation of response in different individuals shows the need for using the individual as his own control.

It is of interest that these clinicians found that patients, who were irritated by ferrous sulfate, tolerated ferrous gluconate very well.

Unofficial Preparations

For those who desire to vary the source of iron from the usual official preparations, the following formulas taken from the *Pharmaceutical Recipe Book* may prove to be of interest:

SYRUP OF FERRIC HYPOPHOSPHITE

Ferric hypophosphite.....	17 Gm.
Potassium citrate.....	25 Gm.
Sucrose.....	850 Gm.
Orange flower water.....	90 cc.
Distilled water, a sufficient quantity	

To make..... 1000 cc.

Dissolve the ferric hypophosphite and the potassium citrate in 225 cc. of distilled water with the aid of heat, and filter. Mix the filtrate with the orange flower water, add sufficient distilled water to make the solution measure 450 cc. and dissolve the sucrose in this liquid with the aid of gentle heat. Finally add sufficient distilled water to make the product measure 1000 cc.

Average Dose—Metric, 4 cc.—Apothecaries, 1 fluid drachm.

COMPOUND SYRUP OF IRON PHOSPHATE

Soluble ferric phosphate.....	37.5 Gm.
Quinine sulfate.....	37.5 Gm.
Strychnine sulfate.....	0.5 Gm.
Diluted phosphoric acid.....	250 cc.
Syrup, a sufficient quantity	

To make..... 1000 cc.

Dissolve the soluble ferric phosphate, quinine sulfate and strychnine sulfate in the diluted phosphoric acid, then add sufficient syrup to make the product measure 1000 cc.

* Ferrous gluconate has been admitted to National Formulary VIII.

Average Dose—Metric, 4 cc.—Apothecaries, 1 fluid drachm.

SYRUP OF FERROUS CHLORIDE

Syrup of Protochloride of Iron

Solution of ferrous chloride, R.B.	50 cc.
Glycerin.....	125 cc.
Orange flower water.....	125 cc.
Syrup, a sufficient quantity	
<hr/>	
To make.....	1000 cc.

Mix the solution of ferrous chloride with the glycerin and orange flower water, and add sufficient syrup to make the product measure 1000 cc.

Average Dose—Metric, 4 cc.—Apothecaries, 1 fluid drachm.

NOTE—This syrup should be freshly prepared.

IRON CITRATE MIXTURE

(Gray)

Iron and ammonium citrate.....	32 Gm.
Citric acid.....	5 Gm.
Tincture of lemon.....	8 cc.
Syrup.....	750 cc.
Distilled water, a sufficient quantity	
<hr/>	

To make..... 1000 cc.

Triturate the citric acid with the iron and ammonium citrate and dissolve in about 200 cc. of distilled water. Add the tincture of lemon and syrup and sufficient distilled water to make the product measure 1000 cc. Set aside for twenty-four hours and filter if necessary.

Average Dose—Metric, 4 cc.—Apothecaries, 1 fluid drachm.

ELIXIR OF FERRIC PYROPHOSPHATE

Elixir of Pyrophosphate of Iron

Soluble ferric pyrophosphate....	35 Gm.
Distilled water.....	60 cc.
Aromatic elixir, a sufficient quantity	
<hr/>	

To make..... 1000 cc.

Dissolve the soluble ferric pyrophosphate in the distilled water, with the aid of heat; add sufficient aromatic elixir to make the product measure 1000 cc. and filter.

Average Dose—Metric, 4 cc.—Apothecaries, 1 fluid drachm.

NOTE—A color change occurs in the above elixir which does not affect its medicinal value.

COMPOUND IRON MIXTURE

Griffith's Mixture

Ferrous sulfate, in clear crystals	6 Gm.
Myrrh, in small pieces.....	18 Gm.
Sucrose.....	18 Gm.
Potassium carbonate.....	8 Gm.
Spirit of lavender.....	60 cc.
Water or rose water, a sufficient quantity	
<hr/>	

To make..... 1000 cc.

Triturate the myrrh, sucrose and potassium carbonate in a mortar with 700 cc. of rose water, at first added very gradually, so that a uniform mixture results. Add the spirit of lavender, then the ferrous sulfate previously dissolved in about 50 cc. of rose water, and lastly sufficient rose water to make the final preparation measure 1000 cc.

Average Dose—Metric, 15 cc.—Apothecaries, 4 fluid drachms.

NOTE—This mixture should be freshly prepared.

SWEET TABLETS OF IRON

Saccharated ferrous carbonate	13 Gm.
Cacao sugar tablet base, R.B.	17.5 Gm.
<hr/>	

To make..... 100 tablets

Mix intimately by trituration in a mortar, and compress in a tablet machine using $\frac{3}{8}$ -inch die and punches, to make 100 tablets.

Average Dose—Child: 1 tablet.

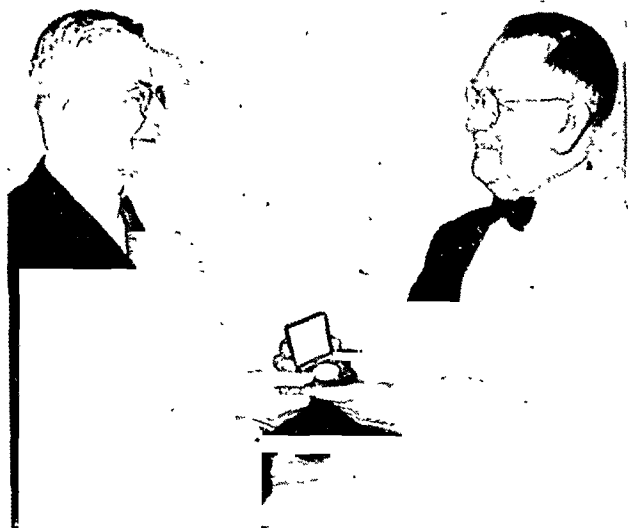
Each tablet contains 0.13 Gm. (2 grains) of saccharated ferrous carbonate.

Not Simple Disease

No attempt has been made to discuss any form of anemia other than that due to simple iron deficiency. Anemia is not, however, a simple disease, but one which requires careful diagnosis by the physician and a treatment based upon the pathological findings. The pharmacist should acquaint himself with the limitations of the various hematinic agents on his shelves.



REMINGTON MEDAL PRESENTED



MEDALIST J. L. ROSIN (left) receives the award from Dr. Curt P. Wimmer.

AFTER a while the conversation turned to iodides and Prof. Remington said, "Joseph, Syrup of Iron Iodide bothers me. There is too much sugar in it, and in cold weather it crystallizes. Yet, if the quantity of the sugar is reduced, the syrup is unstable." Then, after a few moments of thinking, he said, "I think you and I should be able to do something about it." A short time later he died.

Thus Joseph L. Rosin, 1945 Remington Medalist, described his last visit with the great pharmacist to whom the Medal is dedicated. Since that time Mr. Rosin has done "something about" a great many chemical problems connected with the official compendia.

The importance of his service to American pharmacy was formally recognized at the testimonial dinner held December 11 in New York's Hotel Pennsylvania, when the Remington Medal was bestowed upon Mr. Rosin.

In his acceptance address, Mr. Rosin took issue with those who would have us believe that "the sun of pharmacy is setting . . . because the pharmacist no longer makes himself his extracts, tinctures, and so forth.

"No true science wanes or becomes extinct," he observed. Astrology, a pseudo-science, is gone and extinct, but not astronomy. A true science may take on new forms, it hews paths into new directions, but never ceases to blossom and bear fruit. It is ever fertile, ever multiplying and expanding.

"From pharmacy was born lusty, aggressive and fast-marching chemistry. The youngest of her offspring, pharmacology, has already won a seat of equality with the older members of the body scientific. Measured by Emerson's dictum that no science is a science unless it benefits mankind, pharmacy ranks high among the benefactors of humanity," he emphasized.

Speaking of the creative powers of science, Mr. Rosin predicted that the day may not be distant when knowledge will achieve for us almost complete independence of natural resources. "The younger generation may see the time," he continued, "when a nation's wealth will be measured not by the extent of her natural resources, but by the number of her scientists and research laboratories. The future of mankind rests with science."

Commenting on the misuse of scientific products, the Remington Medalist asked: Can we desist from speculating about the untold potentialities for a better world the atomic bomb holds, if we but temper its power with the engineering of the human heart.

In its own field, pharmacy, too, will meet the challenge of the future, he asserted. "In the changing scenes of the world the field for scientific pharmacy is rapidly expanding. The program for pharmaceutical education and training should be broadened to meet the new conditions."

Preceding Mr. Rosin's address, several pharmaceutical leaders, closely associated with the Medalist and his work, paid tribute to his achievements. These were Dr. George D. Beal, assistant director of the Mellon Institute of Industrial Research; Dr. E. Fullerton Cook, chairman of the U. S. P. Revision Committee; Dr. Justin L. Powers, chairman of the National Formulary Committee; Dr. Robert L. Swain, chairman of the U. S. P. Board of Trustees; and George W. Merck, president of Merck & Co. Presiding over the dinner meeting was Dr. Frederick D. Lascoff, president of the New York branch of the AMERICAN PHARMACEUTICAL ASSOCIATION.

CLINICAL TOXICITY OF THIOURACIL*

A SURVEY REPORTED TO THE
COUNCIL ON PHARMACY AND CHEMISTRY, AMERICAN MEDICAL ASSOCIATION
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BECAUSE of the difficulty of determining from reports in the literature the incidence and severity of the toxic reactions resulting from the administration of thiouracil for the treatment of hyperthyroidism, a survey by questionnaire has been made of 5745 patients treated by 328 clinical investigators. The results derived from this survey have been analyzed by statistical methods and constitute the basis of this report.

Data obtained by questionnaire are subject to certain inherent errors. Failure to answer a question, misinterpretation of a question, and accidental insertion of an incorrect figure are among the sources of error in organizing such statistics. The necessity for arbitrary grouping and condensation of data and the inability to reflect secondary factors influencing the answer to a given question contribute to the errors of analysis. Some of these deviations can be held to a minimum by careful phrasing of the questionnaire and by intelligent interpretation of the answers. In a consideration of the data presented here, therefore, these inherent errors must be borne in mind although accepted statistical methods were used in their organization so as to limit the deviations to an irreducible minimum. It is believed nevertheless, that the trends disclosed and the conclusions reached as a result of this survey are correct, even though the statistics are subject to the errors mentioned.

Clinical Material and Therapeutic Appraisal

The material which forms the basis for this report is derived from large clinics, from small clinics, and from individual practitioners. Some of the patients were subjected to the closest scrutiny, which included repeated and extensive laboratory studies; others were followed in less detail.

Many patients were hospitalized, but many were ambulatory during treatment. Despite these variations, it is believed that the results of this survey represent closely those which may be expected when

thiouracil becomes generally available to all physicians.

Since the clinical safety of any potent therapeutic agent should be appraised only in the perspective of its therapeutic usefulness, certain information regarding the value of thiouracil in the treatment of hyperthyroidism was collected. Published reports leave little doubt that in most instances the administration of thiouracil can bring about a remission of the hyperthyroid state. Its usefulness in other conditions associated with derangements of thyroid activity has not been completely evaluated.

This survey revealed that thiouracil is effective against all types of hyperthyroidism whether these be represented by diffuse or by nodular goitres, and regardless of the number of nodules. Thiouracil may also be of value in the treatment of acute thyroiditis although data on this condition are scanty. The drug has been tried and found to be of no value in simple goitre. It has been tried without any useful effect in conditions with related symptomatology but where no hyperthyroidism exists.

An attempt was made to determine what, if any, factors contributed to a successful outcome of thiouracil therapy. The incidence of failure to respond to thiouracil has been correlated with such factors as dose, duration of treatment, and whether iodine therapy had been used prior to thiouracil. Only those cases in which thiouracil was used for treatment of hyperthyroidism are considered and failures directly attributable to toxic reactions are not included in the tabulations below.

A correlation could not be established between either the initial dose or maintenance dose and the incidence of failure. The number of cases receiving 0.1 Gm. per day as an initial dose is too small to be

*From Drug Division, Food and Drug Administration, Federal Security Agency, and the Medical Departments of Lederle Laboratories, Abbott Laboratories, Eli Lilly and Co., E. R. Squibb and Sons, Parke Davis and Co., and the Upjohn Co. The authors wish to express their appreciation for the assistance of Miss Lila Knudsen and Mr. Pete James of the Food and Drug Administration, in the tabulation of the data and in their statistical analysis.

Reprinted from the *Journal of the American Medical Association*, February 9, 1946.

EDITOR'S NOTE: *Thiouracil*, an important new drug for the treatment of all types of hyperthyroidism, has just been released for general use on prescription. Because of various reports on toxicity, FDA did not previously permit new drug applications to become effective until there was assurance that the value of the drug outweighed possible dangers of therapy. Maximum safety in the use of thiouracil will be achieved only through fully informed and constantly vigilant physicians and pharmacists. Since pharmacists share with physicians the responsibility of proper dosage, the JOURNAL considers the accompanying collaborative report to be of especial importance to its readers.

Pharmacists may wish to distribute copies of the report to physicians, together with an announcement that the drug is in stock for prescription use. Reprints can be secured from THIS JOURNAL, 2215 Constitution Ave. N. W., Washington 7, D. C. Until March 10, up to five copies will be supplied without charge on request; additional copies are five cents each. Please enclose a large (No. 10) self-addressed stamped envelope.

This report presents the latest and most authoritative information available on toxic reactions and dosage. For further information on the development of thiouracil, and its chemistry, properties and pharmacology, please see the earlier paper in THIS JOURNAL, 6:359, 1945 (December).

statistically significant. The majority of investigators used either 0.4 Gm. per day or 0.6 Gm. per day, and since the results are as satisfactory at the lower figure as at the higher, it would appear preferable to recommend 0.4 Gm. per day as the initial dose.

Clinical experience has shown that thiouracil should be administered in divided doses throughout the 24-hour period. Administration only once a day is generally followed by poor results. For best results it is suggested that the total daily dose be divided into 3 or 4 parts which are administered at equal intervals during the waking hours.

It has been a common observation that a clinical response to thiouracil may not be seen for several weeks after treatment is started. In this survey there were 209 failures reported in which the duration of treatment was given. Figure 1 shows that the incidence of successful treatment increased as the duration of treatment was prolonged. No explanation is apparent for the low incidence of success at six months, but the figure for thirteen months was derived from too small a number of patients to be significant. To emphasize the desirability of prolonged treatment before classifying a lack of response as a failure, it was observed that in 34% of those patients reported as failures, treatment was discontinued before the eighth week.

It is not uncommon for a patient to show no response to thiouracil in the first four to eight weeks of treatment if iodine had previously been adminis-

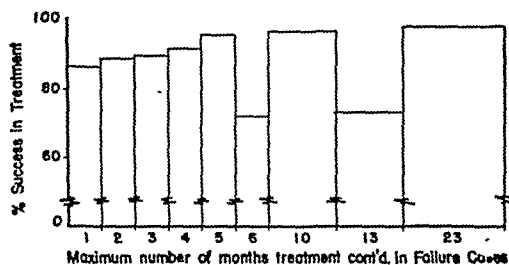


FIG. 1—Relation of satisfactory response to thiouracil to duration of Treatment.

tered or if the gland was large and soft. It is noteworthy, therefore, that of the 71 failures which occurred during the first eight weeks, 70% had had iodine therapy prior to thiouracil treatment. This suggests that some might have responded satisfactorily if the medication had been continued for longer periods.

It was not possible to obtain reliable figures on the incidence of remissions induced by thiouracil. By remission is meant absence of symptoms and a basal metabolic rate within the normal range after the drug was discontinued. The majority of investigators did not terminate treatment except in those cases where thyroidectomy was performed, hence there is no way to determine the duration of remission without the drug. It is evident, however that of the 1236 remissions reported in this series 33.7% had relapsed at the time of inquiry. Remissions as long as a year or more have been reported, but the average relapse occurred in about twenty weeks. Hence, until more is known regarding the conditions influencing both remission and relapse, it is futile to speculate on this problem.

Type and Incidence of Toxic Reactions

The principle toxic reactions observed following medication with thiouracil are: granulocytopenia, leukopenia, drug fever, and dermatitis. At least 27

TABLE 1.—FAILURES OF THIOURACIL THERAPY IN RELATION TO INITIAL DOSE OF THIOURACIL

INITIAL DOSE, GM./DAY	TOTAL CASES	NO. OF FAILURES	PER CENT FAILURES
0.1	35	0	0
0.2	268	9	3.4
0.3	187	12	6.4
0.4	669	30	4.5
0.5-0.6	3448	135	3.9
0.7-0.9	504	32	6.3
1.0 or over	622	31	5.0
TOTAL	5733	249	4.3

other reactions were recorded, of which only 8 were observed in more than 2 cases. This suggests that most of the reported side-reactions other than those specifically named or the eight mentioned later were not related to thiouracil medication.

Twenty-eight investigators reported that the drug occasionally produced nausea sometimes accompanied by dizziness, headache, or abdominal cramps. Parotitis and joint pains have each been reported by 7 investigators. Purpura was reported by 6, jaundice by 4, diarrhea by 4, thyroiditis by 3, and secondary anemia by 3 investigators. Edema, particularly of the extremities, has been mentioned by several investigators as occurring during therapy. It is not clear in all cases that this was due either directly to the drug or to the rapid metabolic and circulatory changes resulting from correction of the hyperthyroidism.

The eight complications of low incidence may or may not be related to administration of thiouracil, since these reactions did not occur with a frequency greater than expected in 5000 persons selected at random and observed for a period of six months to a year. It is recommended, however, that these complications should be watched for since it cannot definitely be proved that the drug was not the responsible agent.

In the series studied in this investigation, 752 cases in which one or more side-reactions occurred were reported. This represents an incidence of 13.1%. These complications were considered by the investigators as severe enough to warrant discontinuance of therapy of 452 patients or 60.1% of those showing some side-reaction.

Granulocytopenia

Since the most serious complication of thiouracil therapy appears to be granulocytopenia, it was pertinent to inquire concerning the frequency of this complication and whether its occurrence could be correlated with the dose, duration of treatment, or other factors. A diagnosis of granulocytopenia was accepted if the total white count was below 4000, the granulocytes markedly diminished, and associated with sudden onset and acute symptoms such as fever, sore throat, prostration, and malaise. Unfortunately not all cases of apparent malignant granulocytopenia are clearly distinguishable from simple neutropenia, particularly in the early stages.

The investigators reported one hundred and sixty eight case of granulocytopenia, but only 142 of these could clearly be classed as the frank malignant type. The remaining 26 cases appeared to be early cases or atypical simple leukopenia with neutropenia, but because the investigators classed them as granulocytopenia they are included as such in these tabulations. The 142 cases of granulocytopenia represent an incidence of 2.5% of this complication and accounted for about 22% of all toxic reactions.

It can be seen from Table 2 that there is no significant relationship between the incidence of granulocytopenia and dosage of thiouracil.

TABLE 2.—INCIDENCE OF GRANULOCYTOPENIA DURING THIOURACIL THERAPY IN RELATION TO INITIAL DOSE

INITIAL DOSE GM./DAY	TOTAL CASES	GRANULOCY- TOPENIA CASES	PER CENT OF TOTAL CASES
0.1-0.4	1159	33	2.8
0.5-0.6	3448	109	3.2
0.7-0.9	504	14	2.8
1.0 and over	612	12	2.0

There was, however, a very clear relationship between the duration of treatment and occurrence of this complication. Figure 2 shows that the incidence of granulocytopenia was greatest during the first four weeks of treatment and declined progressively thereafter. The incidence of this complication in the first month of treatment was 1.4% and more than one half of all the cases occurred during this period. Seventy per cent of the cases of granulocytopenia occurred by the end of the eighth week of treatment. No apparent explanation was found for the high incidence during the seventh month of treatment, but it is suggested that some patients may have lapsed in treatment at this time, and it is generally believed that resumption of therapy after such a lapse may predispose the patient to this complication.

One case of agranulocytosis was reported to have occurred during the fifty-sixth week of treatment, and 1 case, not included in these tabulations, was reported to have occurred six months after discontinuance of treatment. The first case may also have occurred after a temporary discontinuance of therapy.

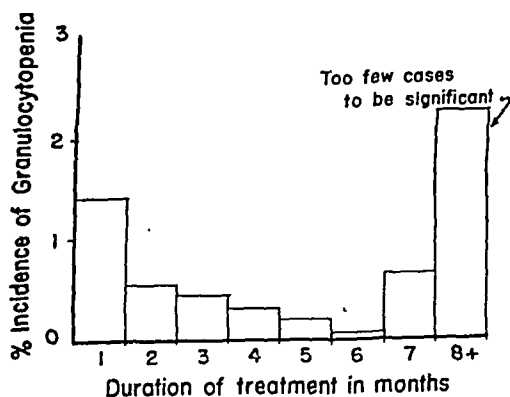


FIG. 2—Relation of incidence of granulocytopenia to duration of treatment.

There were 21 deaths, all attributable to agranulocytosis, establishing a mortality rate of 0.4% for the entire series and a case fatality rate for agranulocytosis of 14%. From the information available in the literature and that obtained in this survey, the most effective treatment of agranulocytosis appears to be the parenteral administration of massive

doses (500,000 units per day) of penicillin and some investigators suggest repeated transfusions of small amounts (200 to 300 cc.) of whole blood. However, there are some who are not in favor of unnecessarily frequent blood transfusions because it has been shown statistically that repeated transfusions increase the risk of transfusion reaction. There is no satisfactory evidence that pantothenic acid, pyridoxine, folic acid, vitamins, or pentnucleotide influence the outcome of this disease or aid in preventing such reactions.

The most important factor in the control of granulocytopenia resulting from thiouracil therapy appears to be discontinuance of therapy at the earliest sign of this complication and prompt institution of vigorous treatment. It is imperative that the patient be instructed to stop the drug and report immediately to the physician if symptoms such as sore throat, fever, coryza, or malaise are noted. The value of repeated blood counts is emphasized by the fact that one patient was found to have a complete absence of granulocytes three days before any symptoms developed.

Leukopenia

One third of all the reported toxic reactions consisted of a leukopenia. In many instances it was difficult to distinguish between a simple leukopenia and an early malignant granulocytopenia. In this survey a designation of simple leukopenia was made when the total white blood cell count was below 4000, the differential count was relatively normal, and the patient showed no subjective symptoms. It may be questioned whether all the cases of leukopenia reported were actually caused by thiouracil administration, since hyperthyroidism itself predisposes toward a leukopenic state. However, there seems to be a clear relationship between the administration of the drug and the onset of this complication and it is felt that any reduction in total white count while the patient is under treatment with thiouracil should be viewed seriously.

Of the 251 cases of leukopenia reported in this series, 234 lend themselves to fairly detailed analysis. This complication had an over-all incidence of 4.4%. From Table 3 it may be seen that dosage bore no relationship to the incidence of leukopenia.

TABLE 3.—INCIDENCE OF LEUKOPENIA IN RELATION TO INITIAL DOSE OF THIOURACIL

INITIAL DOSE, GM /DAY	TOTAL CASES	LEUKOPENIA CASES	PER CENT INCIDENCE
0.1-0.4	1159	58	5.0
0.5-0.6	3448	119	3.5
0.7-0.9	504	44	8.7
1.0 and over	622	30	4.8

The relationship between incidence and duration of treatment is shown in Fig. 3 and resembles closely that of granulocytopenia. The incidence of leukopenia in the first four weeks was 2.7%, and 60% of all these cases occurred during this period. Sev-

enty-five per cent had occurred by the end of eight weeks and 95% by the end of six months.

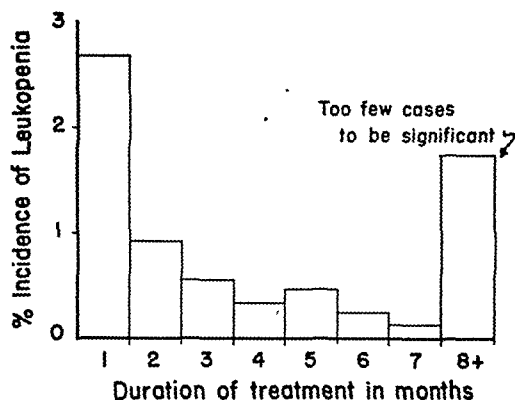


FIG. 3.—Relation of leukopenia to duration of treatment.

In a number of cases in which leukopenia developed, administration of thiouracil was continued and in nearly half of these a gradual return of the white cell count to normal limits was observed. No reliable figures were obtained on the seriousness of this complication and it appears that in some instances it may not be harmful to the patients. However, since it cannot be predicted which case may or may not have a serious prognosis it would seem imperative either to discontinue treatment or have the patient report to the physician at frequent intervals for repeated examinations of the blood. Hospitalization of the patient should be considered if there is a decided reduction in granulocytes.

This precaution is further emphasized by the fact that although 121 patients developed granulocytopenia without a previous leukopenia, and 198 patients developed a leukopenia which did not pass into a granulocytopenia, 47 patients had both complications. If these two complications were to occur in the same individual purely on the basis of chance, it would be expected that these would occur in not more than 7 or 8 patients in a series of the size studied. The actual incidence was six and one-half times the expected incidence, and the difference, when tested by statistical methods, was found to be highly significant ($P < .001$). This suggests that all patients who develop a leukopenia during therapy should be closely watched.

Drug Fever

Drug fever is a reaction not infrequently seen following therapy with a wide variety of substances. It is not surprising, therefore, that this complication was reported in 154 individuals following thiouracil therapy. The incidence of this reaction amounted to 2.7% of all cases and accounted for 20.5% of all toxic reactions. By reference to T

TABLE 4.—INCIDENCE OF DRUG FEVER IN RELATION TO INITIAL DOSE OF THIOURACIL

INITIAL DOSE, GM./DAY	NO. OF CASES	CASES WITH DRUG FEVER	PER CENT INCIDENCE
0.1-0.4	1159	37	3.2
0.5-0.6	3448	86	2.5
0.7-0.9	504	10	2.0
1.0 and over	622	21	3.3

that dosage did not influence the incidence of this reaction. Furthermore, this reaction usually occurs early in the course of therapy as is shown in Fig. 4.

Thirty per cent of these reactions occurred in the first week of therapy and 85% had occurred by the end of the fourth week. Nearly 10% of the cases of drug fever were observed in the first forty-eight hours, and if the patient was retested with the drug, fever usually occurred in less than twelve hours. An interesting observation made by several investigators was that when drug fever occurred early in therapy it was usually a more severe reaction, with temperatures as high as 106° F. reported in some instances. In those instances in which the fever was seen during the later stages of therapy, the temperatures seldom exceeded 102° F., and the entire reaction was of a milder nature. Since a fever is part of the syndrome of agranulocytosis, any patient receiving thiouracil who develops a fever should be examined immediately and white blood cell and differential counts should be obtained in order to rule out agranulocytosis before classifying the fever as a temperature reaction only.

Skin Reactions

The skin reactions which occurred during thiouracil therapy were varied and usually of a mild nature. One hundred and eighty nine instances of these complications were observed, an incidence of 3.3%. One-fourth of the adverse reactions from thiouracil were skin reactions. The frequency of the various types of skin reaction is shown in Table 5. As might be expected, dosage had no influence on the incidence, and although there was some tendency for

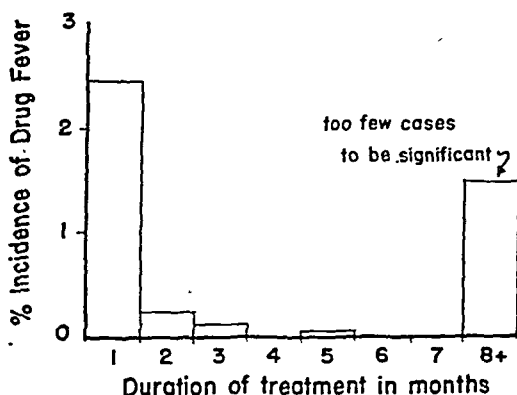


FIG. 4.—Relation of drug fever to duration of treatment.

the reactions to occur early in treatment, particularly if other complications occurred in the same patient, the relationship between duration of treatment and incidence was not as striking as that seen with the other complications.

Although none of the skin reactions was reported as serious, the occurrence of urticaria cannot be regarded as an innocuous reaction. In the case of the

TABLE 5.—SKIN REACTIONS FROM THIOURACIL THERAPY IN 5745 PATIENTS

Urticaria.....	64 cases
Papular rash.....	37 "
Morbilliform rash.....	23 "
Erythema.....	18 "
Macular rash.....	17 "
Acneform rash.....	3 "
Pruritus.....	3 "
Edema of legs.....	1 "
Unspecified dermatitis.....	23 "

sulfonamides such reactions have frequently been associated with more severe complications, hence it would seem advisable to discontinue thiouracil therapy or proceed with great caution if the patient shows an allergic response.

Opinion Survey

Because of relatively high incidence and severity of the toxic reactions following thiouracil therapy, an attempt was made to poll the investigators regarding their opinions of the relative safety of this drug.

The following question was asked:

In your opinion is the incidence of toxic reactions greater than the incidence of bad results (including postoperative thyroid crisis, injury to recurrent laryngeal nerve, parathyroid tetany, and other operative complications; uncontrolled or fatal thyrotoxicosis in patients in whom operation is inadvisable or contraindicated) seen with other methods of treatment?


The answers to this question are summarized in Table 6. It is apparent that the large majority

TABLE 6

Opinions on relative safety of thiouracil. Is the incidence of toxic reactions to thiouracil greater or less than complications of present methods of treating hyperthyroidism?

ANSWER	PER CENT OF INVESTIGATORS
Less	78.6
Greater	4.2
No opinion	17.2

of those who have had experience with thiouracil feel that it offers a definite advantage over present

methods of treatment of hyperthyroidism from the standpoint of safety. 

Summary and Recommendations

On the basis of this survey covering the experience of 328 investigators on 5745 cases the following recommendations appear justified:

1. Thiouracil is effective in the management of thyrotoxicosis and possibly thyroiditis.

2. Thiouracil is of no value and should not be used in other derangements of thyroid activity or in conditions not associated with hyperthyroidism.

3. More information should be secured concerning the induction of remissions by thiouracil and the factors affecting the permanence of these remissions.

4. At present, the optimum dosage schedule appears to be 0.4 Gms. per day, in divided doses initially, and after the symptoms are controlled or the basal metabolic rate is within the normal range the dose should be reduced to 0.1 or 0.2 Gms. per day. More information is needed on the effectiveness of lower doses.

5. On the basis of the available information, it can be recommended that thiouracil be used for pre-operative treatment or in those patients in whom operation is contraindicated. The wisdom of depending upon thiouracil as a substitute for operative procedures can only be determined by following the results of investigations carried on for longer periods.

6. Many patients, particularly those who have received previous iodine therapy, do not respond immediately to thiouracil therapy, hence medication should be continued for at least thirty days, or, for a patient to whom iodine has been administered, for sixty to one hundred days, before concluding that no response to thiouracil is possible.

7. Approximately 13% of all cases can be expected to show some adverse reaction to thiouracil therapy.

8. The most frequent and severe complications of thiouracil therapy are granulocytopenia, leukopenia, drug fever, and dermatitis. The appearance of jaundice, purpura, and anemia have been reported and should be watched for, and if observed call for a careful evaluation of the clinical condition of the patient before thiouracil therapy is resumed.

9. Granulocytopenia occurs in about 2.5% of cases and is the most serious complication of thiouracil therapy. This reaction tends to occur in the early weeks of treatment and 80% of the cases were seen by the twelfth week of therapy.

No relationship to the dose of thiouracil was apparent. Treatment of this complication should consist of massive doses of penicillin (500,000 units per day).

10. Leukopenia had an incidence of 4.4%, occurred early in treatment (75% occurring in the first eight weeks) but was not related to dosage. More information is needed on the relationship between leukopenia and granulocytopenia.

11. Drug fever had an incidence of 2.7%, occurred very early in treatment (85% occurring in the first four weeks) but was not related to dosage. Reactions occurring early tended to be more severe than those occurring late in treatment.

12. Skin reactions had an incidence of 3.3%. Urticaria was the most common, but a wide variety of other dermatoses were seen. None were deemed serious, but caution is advised in continuing therapy in the presence of these complications.

13. Three-fourths of the investigators were of the opinion that the incidence of adverse reactions of thiouracil was less than the incidence of complications from present methods of treatment.

14. It should be emphasized that patients receiving thiouracil therapy should be carefully watched, especially during the first twelve weeks of therapy. Patients should be instructed to report immediately to their physician if any adverse symptoms such as sore throat, fever, coryza or malaise are experienced.

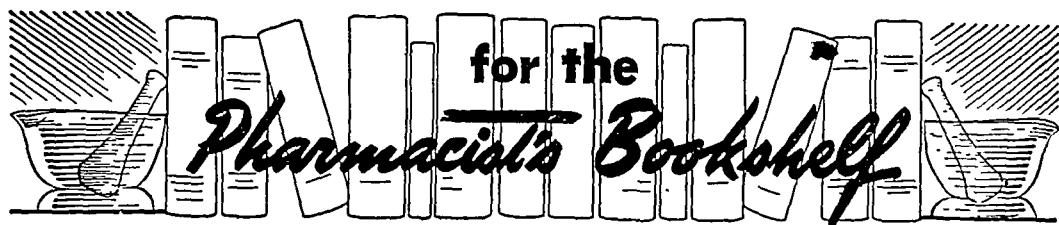
15. Since the mild and the juvenile types of hyperthyroidism can frequently be controlled adequately by iodine therapy alone, thiouracil should not be used for these patients unless the safer form of therapy proves ineffective.



SUBSTITUTING FOR TRADE-MARKED PRODUCT BRINGS LEGAL ACTION

Legal action has been instituted against retail pharmacists for substituting other mineral oil products when McKesson & Robbins' "Albolene" was called for. In announcing the action, McKesson & Robbins warned that it will continue to prosecute other retail pharmacists engaging in this practice to the full extent of the law.

Such substitute sales, the firm points out, violates property rights in the trade mark, ~~and~~ ^{erodes} company good will and competitive practice.



A WELL-BALANCED BASIC LIBRARY

GOOD reference books extend the pharmacist's professional horizon whatever his education may be. An up-to-date library, however small, is a sure mark of the progressive and successful pharmacy. Yet it is a department easily, and perhaps most often, neglected. In response to inquiries concerning a well-balanced reference shelf, *THIS JOURNAL* asked representatives of the AMERICAN PHARMACEUTICAL ASSOCIATION, American Society of Hospital Pharmacists and American College of Apothecaries to recommend their favorite volumes.

The basic list, given below, represents as nearly as possible the preferences of these successful pharmacists—the books they have found most useful and essential to modern practice. Representing a minimum goal, the primary list involves a total investment of about \$80 for books which should have high priority on your purchases.

An additional investment of approximately \$45 will be required for the supplemental list. Depending on the type of practice and special needs, some pharmacists may rightfully maintain that books in the supplemental group demand top priority. Since books, like friends, hold different values for different people, those surveyed may not have included one of your favorite volumes in this representative selection.

Primary List

1. PHARMACOPOEIA OF THE UNITED STATES XII (and Supplements)—*Mack Printing Co.*, 20th and Northampton Sts., Easton, Pa.; 380 pp., \$7.50.
2. NATIONAL FORMULARY VII (and Supplements)—*Mack Printing Co.*, 20th and Northampton Sts., Easton, Pa.; 690 pp., \$6.
3. UNITED STATES DISPENSATORY, 23rd Edition—H. C. Wood and Arthur Osol—*J. B. Lippincott Co.*, 227-231 S. 6th St., Philadelphia; 1881 pp., \$15.
4. NEW AND NONOFFICIAL REMEDIES, 1945 (and Supplements)—*American Medical Association*, 535 N. Dearborn St., Chicago 10; 760 pp., \$1.50.

5. PHARMACEUTICAL RECIPE BOOK III—*Mack Printing Co.*, 20th and Northampton Sts., Easton, Pa.; 551 pp., \$5.

6. PRINCIPLES OF PHARMACY—H. V. Army and R. P. Fischelis—*W. B. Saunders Co.*, W. Washington Square, Philadelphia; 1139 pp., \$8.

or

REMINGTON'S PRACTICE OF PHARMACY (temporarily out of print).*

7. PHARMACOLOGICAL BASIS OF THERAPEUTICS—L. Goodman and A. Gilman—*Macmillan Co.*, 60 Fifth Ave., New York, N. Y.; 1387 pp., \$12.50.

or

MANUAL OF PHARMACOLOGY, 6th Edition—T. Sollmann—*W. B. Saunders Co.*, W. Washington Square, Philadelphia; 1298 pp., \$8.75.

8. MODERN DRUG ENCYCLOPEDIA AND THERAPEUTIC GUIDE, 2nd Edition—J. Gutman—*New Modern Drugs*, 49 W. 45th St., New York; 1644 pp., \$10; NEW MODERN DRUGS QUARTERLY SUPPLEMENTS, \$1 per year.
9. AMERICAN ILLUSTRATED MEDICAL DICTIONARY, 20th edition—W. A. Newman Dorland—*W. B. Saunders Co.*, W. Washington Square, Philadelphia; 1668 pp., \$7.50.

or

GOULD'S MEDICAL DICTIONARY—*Blakiston and Sons*, 1012 Walnut St., Philadelphia; 1530 pp., \$7.50.

10. MERCK MANUAL—*Merck and Co.*, Rahway, N. J.; 1836 pp., \$2.
11. MERCK INDEX—*Merck and Co.*, Rahway, N. J.; 1060 pp., \$3.
12. PHARMACEUTICAL CALCULATIONS—W. T. Bradley and C. B. Gustafson—*Lea & Febiger*, Washington Square, Philadelphia 6; 283 pp., \$2.75.

or

COURSE IN PHARMACEUTICAL AND CHEMICAL ARITHMETIC—J. W. Sturmer—*Julius W. Sturmer*, 601 Lees Ave., Collingswood, N. J.; 147 pp., \$2; ARITHMETIC OF PHARMACY—A. B. Stevens—*D. Van Nostrand Company*, 250 Fourth Ave., New York, N. Y.; 100

* A useful volume in this general category, too new to have been evaluated by pharmacists, is AMERICAN PHARMACY—R. A. Lyman, Ed.—*J. B. Lippincott Co.*, E. Washington Square, Philadelphia 5; 540 pp., \$3.

pp., \$2 (or similar text in arithmetic).

Supplemental List

1. BACTERIOLOGY AND ALLIED SUBJECTS—Louis Gershenfeld—*Mack Publishing Co.*, 20th and Northampton Sts., Easton, Pa.; 561 pp., \$6.
2. DRUG STORE ACCOUNTING—J. B. Heckert and W. E. Dickerson—*McGraw-Hill Book Co.*, 330 W. 42nd St., New York; 415 pp., \$4.
3. DRUG STORE MANAGEMENT—H. C. Nolen and H. H. Maynard—*McGraw-Hill Book Co.*, 330 W. 42nd St., New York; 570 pp., \$4.
4. SCOVILLE'S THE ART OF COMPOUNDING, 7th Edition—J. L. Powers and G. E. Crossen—*Blakiston Co.*, 1012 Walnut St., Philadelphia; 457 pp., \$4.

or

PHARMACEUTICAL DISPENSING—W. J. Husa—*Husa Brothers*, College and Dubuque Sts., Iowa City, Ia., 428 pp., \$4.

5. PHYSIOLOGICAL BASIS OF MEDICAL PRACTICE—C. H. Best and M. B. Taylor—*Williams & Wilkins Co.*, Mount Royal and Guilford Aves., Baltimore, Md.; 1942 pp., \$10.
6. CHEMISTRY OF ORGANIC AND MEDICINAL PRODUCTS—G. L. Jenkins and W. H. Hartung—*John Wiley and Sons*, 440 Fourth Ave., New York; 675 pp., \$6.50.
7. INCOMPATIBILITIES IN PRESCRIPTIONS—E. A. Ruddiman and A. B. Nichols—*John Wiley and Sons*, 440 Fourth Ave., New York; 337 pp., \$2.75.
8. HANDBOOK OF CHEMISTRY—N. A. Lange—*Handbook Pubs.*, Sandusky, O., 1750 pp., \$6.

or

HANDBOOK OF CHEMISTRY AND PHYSICS—C. D. Hodgman, Ed.—*Chemical Rubber Publishing Co.*, 1900 W. 112th St., Cleveland, O.; 2221 pp., \$3.50.

Other helpful books covering specific classes of preparations include the following:

CHEMISTRY AND MANUFACTURE OF COSMETICS—Maison G. De Navarre—*D. Van Nostrand Co.*, 250 Fourth Ave., New York; 745 pp., \$8.

PENICILLIN AND OTHER ANTIBIOTIC AGENTS—W. E. Herrell—*W. B. Saunders Co.*, W. Washington Square, Philadelphia, Pa.; 348 pp., \$5.

THE AVITAMINOSES, 2nd Ed.—W. H. Eddy and G. Dalldorf—*Williams & Wilkins Co.*, Mt. Royal and Guilford Aves., Baltimore, Md.; 519 pp., \$4.50.

GLANDULAR PHYSIOLOGY AND THERAPY, 2nd Ed.—*American Medical Association*, 535 N. Dearborn St., Chicago; 570 pp., \$2.50.

HANDBOOK OF OCULAR THERAPEUTICS, 2nd Ed.—S. R. Gifford—*Lea & Febiger*, 600 S. Washington Square, Philadelphia; 341 pp., \$3.75.

DERMATOLOGIC THERAPY IN GENERAL PRACTICE—M. B. Sulzberger and J. Wolf—*Yearbook Publishers*, 304 S. Dearborn St., Chicago; 632 pp., \$5.

PLANNING AND DESIGN SERVICE FOR PHARMACIES ESTABLISHED

A planning and design service for pharmacists who wish to remodel or open new pharmacies has been established by J. W. Snowden of Aurora, Ill. In addition to his new undertaking, Mr. Snowden will continue to serve the Pictorial Paper Package Corp. as product design and professional promotion consultant.

The new service will adapt structural design to the pharmacist's individual objectives, policies, competitive conditions and location.

After visiting 3000 pharmacies in 47 states, Mr. Snowden concluded that general plans supplied by mail would not prove satisfactory and therefore established an individualized service.

FDA ANNOUNCES PROMOTIONS

Appointment of Charles W. Crawford, present Assistant Commissioner of Food and Drugs, to the position of Associate Commissioner and the promotion of Dr. Louis D. Elliott and George P. Larrick to positions as Assistant Commissioners has been announced by Commissioner Paul B. Dunbar of the Food and Drug Administration.

Mr. Crawford is responsible for initiation of regulations and standards to be promulgated, in addition to serving as second ranking officer in the FDA. Dr. Elliott is responsible for law-enforcement operations related to foods and is in charge of import control work. Mr. Larrick will continue to have general charge of the inspection work of the field force and will also be responsible for law-enforcement operations relating to drugs and cosmetics.

The title of the FDA Drug Division has been changed to Medical Division to indicate more clearly the scope of its functions. Dr. R. P. Herwick, formerly holding the title of Division chief, has been given the title of Medical Director.

BOOK SERVICE

THIS JOURNAL will be pleased to obtain any professional book or periodical in print for its readers. Publications will be sent postpaid on receipt of check or money order covering the regular retail price. Address the Journal of the American Pharmaceutical Association, Book Dept., 2215 Constitution Ave., Washington 7.

U. S. P. XIII AND N. F. VIII INTRODUC

by C. O. LEE

CON: The pharmacists of the country will soon know that their newly revised official standards, forthcoming in the United States Pharmacopœia XIII and the National Formulary VIII, have been Anglicized and greatly modernized. This has been done in an effort to make the books more useful to the physicians, the chemists, the enforcement officials, and the pharmacologists. The pharmacists are the forgotten men.

Pharmacists for these many decades have prided themselves upon their knowledge of Latinized titles for official drugs, chemicals and preparations. This was their stock in trade. In the future they will need to know only what other people know concerning the names of substances.

The vote of the Revision Committees to make English the language of the first title in the U. S. P. XIII and N. F. VIII came after no little discussion concerning the change. To some of us it seems that this change had to come. Latin has been abandoned by other pharmacopœias, so it is quite natural that we in America should follow suit. It is unfortunate that all pharmacists could not be given a chance to vote upon this question, but such problems are decided by the Committees of Revision.

Titles in the U. S. P. XIII and N. F. VIII will be arranged in a strict alphabetic fashion according to English. It is further planned to arrange basic substances and their preparations together. For example, *Fluidextract of Belladonna* will not be found among the fluidextracts. It will be listed as *Belladonna Leaf Fluidextract*. This not only removes it from the customary grouping of fluidextracts, but changes the reading of the title which is new and strange to say the least. So it is with many other well-known products such as Aromatic Ammonia Spirit, Citric Acid Syrup, Glycyrrhiza Extract, and Lemon Tincture. We are used to this idea for chemicals and other simples but not for the other forms of administration.

Camphor Water will be found alphabetically under *C*, while Peppermint Water will be under *P*. Therefore, pharmacists must expect to find the traditional arrangement of preparations, so well known to them, completely erased from pages of

(See Lee, page 72)

EDITOR'S NOTE: Transposition of Latin and English titles in the new U. S. P. and N. F. has brought about a new plan of monograph arrangement. This break with tradition naturally raises several points for discussion. The JOURNAL herewith publishes the views of Dr. C. Lee, of the Purdue University School of Pharmacy, who considers the new monograph arrangement, and the manner in which it was adopted, to be unsatisfactory. A letter by Dr. E. Fullerton Cook, chairman of the U. S. Revision Committee, is published on the facing page that pharmacists may have both viewpoints on this question. The principal changes involved in the new arrangement are:

(1) The position of Latin and English titles will be reversed, but Latin will not be omitted.

(2) Each basic drug will be followed by monographs for its preparations. Instead of all tinctures being grouped together, for example, each one will follow the monograph for its principal active constituent. The titles of

MARGINAL INDEX

Terpin Hydrate and Codeine Elixir
TERPIN HYDRATE
Elixir Terpin Hydrate
Elix. Terpin Hydrate

Codeine
Terpin Hydrate Elixir, a sufficient quantity
To make

Dissolve the codeine in a sufficient quantity of alcohol to make the product measure 10 cc.

Alcohol content—From 33 to 42 per cent
Storage—Preserve Terpin Hydrate Elixir in a dark glass bottle.

AVERAGE DOSE—4 cc. (1 fl. oz.)
One average metric dose contains 100 mg.

METRIC EMPHASIZED

AN ARRANGEMENT OF MONOGRAPHS

by E. FULLERTON COOK

... will be grouped together under "T," however, ... references to the monographs.

English titles will be recorded, where necessary, ... about uniformity. In the present compendia, ... titles appear in two ways: with the form of ... first (e.g., Tablets of Acetanilid); and with ... last (e.g., Chrysarobin Ointment). On this basis, ... of Acetanilid will be changed to Acetanilid Tablets. To overcome the complication of modifying words ... in titles (e.g., "Compound"), a marginal index ... will be included as illustrated below. For ex- ... Compound Pepsin Elixir will be an official title. ... exception, will be listed in the marginal index as ... Elixir, Compound," so that the preparation will ... follow the monograph for Pepsin, and thus ... uniformity in the new arrangement. A cross ... will also be listed under "C" as a further meas- ... avoid any early difficulty in locating such mono-

PROPOSED
FORM OF MEDICATION
LAST IN ENGLISH TITLES -
COCAINE ELIXIR
Codeinæ
..... 2 Gm.
..... 1000 cc.
of the terpin hydrate elixir
of C₂H₅OH.
in tight containers.
and 68 mg. of Terpin Hydrate.

DEAR DOCTOR LEE:

PRO: I was greatly surprised and much distressed to learn through your correspondence with Dr. Powers, as recently released in the National Formulary Circular, pages 1866 to 1874, that you felt that I had not given the members of the U. S. P. Revision Committee an opportunity to express their views or ask for a vote on the arrangement of monographs in the new Pharmacopœia.

The proposal, for title arrangement, was worked out in conference between Dr. Powers of the National Formulary Committee, Dr. DuMez, chairman of the U. S. P. Nomenclature Subcommittee, and myself, fully explained to the members of the Revision Committee, and to avoid any misunderstanding and to follow, a thoroughly established program of Pharmacopœial revision the proposal was accompanied by a printed section clearly showing exactly how the plan would be applied if used in the new Pharmacopœia. I also presented the plan and showed the printed examples to many individuals, including prominent pharmacists and physicians and also to every group before whom I spoke during that period, and your letter of disapproval is the only opposition I have heard.

I assumed that your two letters to me were of the nature of personal correspondence for you never offered a motion to retain the previous Pharmacopœial order of arrangement which was always your privilege and the established rule of the Revision Committee. This would have at once opened the question for debate and a vote in the Committee.

I must say that I had hoped that the more extensive presentation of texts in the proof, following the proposed arrangement, had convinced you of the merits of the plan. Many others have expressed their complete approval and believe that it will increase the usefulness of the Pharmacopœia as a cooperative link between the pharmacist and the physician.

It should be of great help to the pharmacist, in extending information to physicians about Pharmacopœial medicines, to be able to open the Pharmacopœia and show his doctor friends page after page of standardized cardiovascular drugs, starting with the crude Digitalis Leaf, then the

(See Cook, page 72)

LEE (continued from page 70)

the U. S. P. and N. F. Elixirs, tinctures, waters, ointments, solutions, and the like will be scattered from A to Z throughout the books. In the official sense of the word the present classification of pharmaceuticals is doomed. This is a professional travesty which has been thrust upon the pharmacists of America through no choice of their own. What is even more ridiculous, the U. S. P. Committee of Revision has not had, up to this moment, the opportunity of accepting or rejecting, *by vote*, this new radical and questionable arrangement of monographs. We must not forget that when we destroy the traditional system of classification of pharmaceuticals we destroy one of the foundations upon which the profession has been built.

This radical new arrangement is most certainly more than an editorial prerogative. You may well ask, how did it all come about? This editorial is being written in an effort to find out. It will help greatly if you will join me in this inquiry.

The proposed new arrangement of monographs of the forthcoming Pharmacopœia and National Formulary have appeared in the galley proofs of these two books. Whatever merits such an arrangement may have are in truth nullified by the fact that we, the pharmacists, are being forced to accept it without having any voice in choosing it.

Whose books are these? Are they for the doctors and the chemists, or are they for the pharmacists? Let us not forget that in 1906 the *pharmacists* furnished the government with legal standards useful in the enforcement of the then new Federal Food and Drugs Act. This is a fact of which pharmacy has a right to be proud.

Let's render unto Caesar what is Caesar's, but no more.

COOK (continued from page 71)

pharmaceuticals including a standardized Powdered Digitalis Leaf, Digitalis Capsules, Digitalis Tablets, Digitalis Injection, and Digitalis Tincture. Also Digitalin with its preparations, a Tablet and an Injection, and Digoxin with its Tablet and Injection, etc.

By the old arrangement this impressive evidence of up-to-date Pharmacopœial medicines, belonging to a specific class, would have been impossible.

So far as I can see the only advantage of the old arrangement whereby all Tinctures, all Tablets, all Ointments, etc., followed each other in alphabetical order, was for the teacher who wished to

present an entire class of galenical products to his pupils when he discussed the characteristics of the class. Any one who wishes to do this will still find alphabetically in the new Pharmacopœia, under each class name, such as Tinctures, Tablets, Ointments, etc., a list of all U. S. P. representatives, with page numbers where the detailed monographs can be found. This was shown in the printed model. When this phase of the situation was discussed in my office it was believed that your views were fully covered by this feature of the plan.

I am particularly disturbed that you should feel that this or any other action of mine as Chairman of the U. S. P. Committee of Revision suggested a tricky or pressure administration. I have always endeavored to practice the utmost fairness in all relations and have complete confidence in the policy of open discussions and then the vote. Of course you know that it is impossible to vote on every U. S. P. proposal. We would have thousands of votes and for the large Committee to vote on every point would force many members to vote on matters in which they had no specific information. The policy, therefore, for years has been to accept many proposals without vote but always with the privilege given any member to move a reconsideration, to be followed by general discussion and a vote.

I wish that you had expressed yourself freely about this when you were with me in the Ointment Conference in Philadelphia on June 27th last. If you had done so I am sure we could have avoided any misunderstanding.

It is too late, of course, at this stage of the revision to alter the plan since it is already set up in the proof, but I hope that after you have used it for a while you will like it as much as the many who have already expressed their approval to me. As a teacher of pharmacy and as a pharmacist I can see no disadvantage, but many advantages to pharmacy through the change.

Sincerely yours,

F. FULLERTON COOK

—R—

PHARMACIST IS BUFFALO MAYOR

Pharmacist Bernard J. Dowd has been elected mayor of Buffalo, N. Y. After twenty-five years in the profession, Mr. Dowd will sell his prescription shop to devote full time to his executive duties. He is a graduate of the University of Buffalo.

The city's first mayor was also a pharmacist, according to the *Buffalo News*.

A NOTE ON WRITING PRESCRIPTION LABELS

by ARTHUR A. HOEHN

FELLOW, AMERICAN COLLEGE OF APOTHECARIES
EAU CLAIRE, WISCONSIN

INTERPRET PHYSICIAN'S WISHES IN LANGUAGE THAT IS CLEAR, COMPLETE AND GRAMMATICAL

THE importance of intelligent interpretation of the "Sig:" on prescriptions filled by the pharmacist cannot be overemphasized. Too many pharmacists pass over the opportunity to tell the patient in adequate terms how to use the prescription which they so carefully, accurately and scientifically compound. It seems to me that an outstanding accomplishment that ought to be attained by any pharmacy and be particularly identified with all accredited pharmacies of the American College of Apothecaries is the writing of prescription labels "true to form," clear and complete.

The writer once served an apprenticeship under a pharmacist whose contention, in the form of a "must," was that the physician's "Sig:" must never, under any circumstances, be altered in the slightest—it must be transferred to the label just as it was written. Any violation of this practice was, in his estimation, the most serious offense that could be committed in the sanctum of his prescription room. While it is true that directions in those days were a bit more explicit than they are today, it still is true that his patrons often took home with them, on the labels of his carefully compounded prescriptions, an unintelligible assortment of directions. Too often it was necessary for some to call back for clarification of those same unedited directions. This, however, meant to him only a lack of intelligence on the part of the patron.

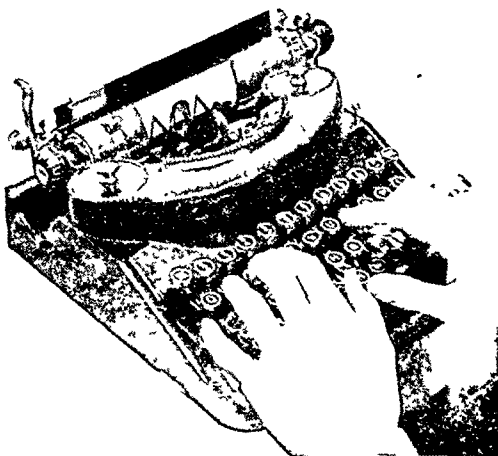
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COOK (continued from page 71)

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A NOTE ON WRITING PRESCRIPTION LABELS

by ARTHUR A. HOEHN

FELLOW, AMERICAN COLLEGE OF APOTHECARIES
EAU CLAIRE, WISCONSIN

INTERPRET PHYSICIAN'S WISHES IN LANGUAGE THAT IS CLEAR, COMPLETE AND GRAMMATICAL

THE importance of intelligent interpretation of the "Sig:" on prescriptions filled by the pharmacist cannot be overemphasized. Too many pharmacists pass over the opportunity to tell the patient in adequate terms how to use the prescription which they so carefully, accurately and scientifically compound. It seems to me that an outstanding accomplishment that ought to be attained by any pharmacy and be particularly identified with all accredited pharmacies of the American College of Apothecaries is the writing of prescription labels "true to form," clear and complete.

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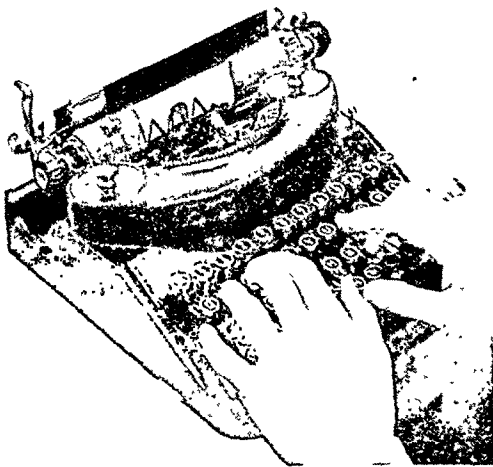
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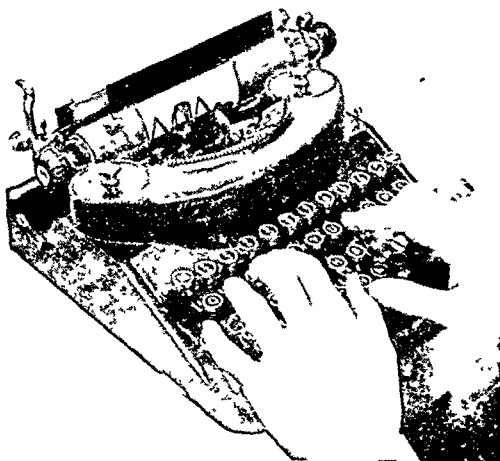
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after meals," as was intended for the effervescent tablet prescription bearing the foregoing directions.

Then there is the case of Dr. Smith who writes: "5 i q. h. 2-3-4 as needed by cough." This should be directed "for cough," since medication is intended *for* a condition and not *by* a condition.

To many patients the "shake well" label on the bottle is not taken too seriously. To make the *shake* more important, it is a good idea to prefix the directions with: "Shake well and take" or "Shake well and apply," etc.

Instead of writing "to ear"—"to eye"—"on hand"—"on area," why not insert *the*: "To the ear"—"to the eye," etc., which make it sound less like a telegram?

When writing the frequently used "as needed" or "as required" why not "Use as needed" or "Use as is required"?

For directions on an insoluble powder intended to be taken in a liquid it is well to say: "Stir one (1) teaspoonful in a half glass of water and drink before it settles," instead of "One teaspoonful in liquid," etc.

I have before me a label from a drugstore which advertises: "Our pharmacists are specialists in prescription compounding." That may be true, but the advertisement neglects to mention that they write very poor direction labels. This label reads: "1-3 times daily until bowels get loose

then 1 a day." Another: "One morning and Evening."

Here is one from an external prescription which might well be taken internally. There is no "external" label on the bottle and the directions read: "One teaspoonful in glass water 30 minutes every 4 hours during day." One teaspoonful of Burow's solution was to be added to a glass of water and the solution used to moisten the dressing, which was to be applied for thirty (30) minutes, every four (4) hours, during the day.

The following example is particularly bad for any kind of pharmacy: "2 after breakfast for 3 days increase 2-3 times a day first month then reduce to 1 or 2 a day." The entire puff in one breath, without punctuation! What was really intended for the patient's guidance was: *First three (3) days: Take two (2) tablets after breakfast. Next twenty-seven (27) days: Take two (2) tablets three (3) times daily. After that: reduce the dose to one (1) tablet once or twice daily.*

We would write the italicized words in red ink.

Many other instances could be cited of ways to assure that the physician's wishes are interpreted on the prescription label clearly, completely and in language always intelligible to the patient. Pharmacies accredited by the American College of Apothecaries should be meticulous in their attention to such details and lead the field in the art of writing better directions.

DRUG TRADE CONFERENCE MEETS

TEN resolutions, printed in full below, summarize the actions taken by the National Drug Trade Conference at its December meeting in Washington, D. C., the first session held since 1941. Nine member associations, including the A. Ph. A., participate in the Conference, which is representative of all branches of the pharmaceutical profession and industry.

1

RESOLVED that the United States *Civil Service Commission** be requested to include pharmacists on the list of positions for which formal education is prescribed, and that a successfully completed full curriculum of study leading to a bachelor's degree in pharmacy in a college or university of recognized standing be made the minimum requirement for admission to the pharmacist examination for government positions.

2

RESOLVED that the National Drug Trade Conference recommends:

(1) That a complete *Census of Business*, as well as a complete *Census of Manufactures*, be made

during 1947 covering the year 1946.

(2) That a complete Census of Business be made at five-year intervals thereafter concurrently with a complete Census of Manufactures covering the same calendar years.

(3) That the complete Census of Manufactures be taken quinquennially in place of biennially only if annual sample surveys providing adequate information with respect to sales by major product classifications can be undertaken.

(4) That annual sample surveys be made of at least the major retail and wholesale trades.

(5) That monthly reports based on selected samples be made of at least the major wholesale and retail trades, with wholesale data to be reported by geographical regions and retail data by states.

(6) That a copy of these recommendations be submitted to the appropriate officers of the Depart-

* Italics in resolutions have no significance except to simplify future reference to the stand of the Conference on specific subjects.

ment of Commerce and to the Executive Secretary of each constituent member of the Conference.

3

RESOLVED that the National Drug Trade Conference favors enactment of the necessary legislation to *restrict administrative practice* wherein the administrative agency serves as prosecutor, judge and jury and to provide for impartial, speedy and capable independent determination of all disputed situations of fact.

4

RESOLVED that a committee composed of representatives of the members of the National Drug Trade Conference is hereby authorized to consider and report to the Conference on the feasibility of formulating *uniform legislation* of interest to the drug industry as a whole, the committee to consist of one delegate appointed by each conference member.

5

Whereas the American Foundation for Pharmaceutical Education is now firmly established and functioning in a very effective way toward development and promotion of pharmaceutical education, and

Whereas the National Drug Trade Conference unanimously sponsored the organization of the American Foundation for Pharmaceutical Education after many years of study by its Committee on Endowment and by the full membership in annual meetings of the Conference, and

Whereas all of the members of the National Drug Trade Conference are members of the American Foundation for Pharmaceutical Education, and

Whereas a large number in the drug industry have not as yet become patrons of the Foundation, now therefore be it

RESOLVED that the National Drug Trade Conference fully endorse the work of the American Foundation for Pharmaceutical Education and urge all members to give full support to its work and activities.

6

RESOLVED that the National Drug Trade Conference commends the efforts of the schools and colleges of pharmacy to improve and strengthen pharmaceutical education and urges the development of programs for *graduate study* which will yield the teachers needed to maintain the highest standards of education and the scientific personnel required by the industry for research and greater contributions to the public health.

7

RESOLVED that the National Drug Trade Conference record its approval of Senate 1417 introduced by Senator Saltenstall of Massachusetts which will give to the District of Columbia a *Fair Trade Act* similar to those now in effect in 45 states of the Union.

8

Whereas progress in the medical sciences and the rapid advancement in the production of drugs and

pharmaceutical preparations of a highly scientific character require greater foundational training as a basis for the professional courses in pharmacy, and

Whereas future practitioners of pharmacy will be called upon to a greater extent than ever before to supply information on these highly scientific products, be it

RESOLVED that the National Drug Trade Conference take every necessary step to safeguard the higher educational program for the training of pharmacists which has been developed in the past decade. To accomplish this end, be it further

RESOLVED that the National Drug Trade Conference urge that every effort be made to prevent the enactment of legislation which seeks to break down established *standards of pharmaceutical education and licensure* and, be it further

RESOLVED that the Conference re-affirms its belief that graduation from an accredited college of pharmacy with a four-year course of instruction is an absolute minimum qualification for admission to the practice of pharmacy, and be it further

RESOLVED that any effort to reduce the foregoing minimum requirement is deemed by this Conference to be contrary to the public interest, and be it further

RESOLVED that the recognition of any course in pharmacy which is not accredited by the American Council on Pharmaceutical Education is contrary to the best interests of students desiring to qualify for licensure as pharmacists and contrary to the best interests of the public, and be it further

RESOLVED that in order that *G. I. pharmacy students* gain the fullest advantage from their pharmaceutical education, they be urged to enroll only in schools or colleges of pharmacy accredited by the American Council for Pharmaceutical Education and in their own interest to refrain from undertaking any pharmacy courses at schools of pharmacy which are not so accredited.

9

Whereas the National Drug Trade Conference endorsed the proposal to place a *Pharmacy Corps* in the United States Army and was gratified when the Congress passed the necessary act which became Public Law 130, July 12, 1943, and

Whereas little progress has been made toward making this law effective, be it

RESOLVED that the National Drug Trade Conference calls upon the Surgeon General of the Army to take the necessary measures to activate this Corps as soon as possible.

10

Whereas it is becoming increasingly evident that the problems of pharmacy and the drug industry both commercial and professional may best be solved through *scientific research*, therefore be it

RESOLVED that the National Drug Trade Conference urges that all organizations within the drug industry give consideration to the support of scientific research projects for the solution of such problems and to the underwriting of fellowships for graduate work on such subjects.

Mystery of the FIRST ENGLISH PHARMACOPOEIA

by GEORGE URDANG

DIRECTOR, AMERICAN INSTITUTE OF THE HISTORY OF PHARMACY

IT WAS in 1585, three years before the Spanish Armada was defeated by the British, that the Royal College of Physicians of London considered for the first time "the compilation of a certain, public and uniform Pharmacopœia to be adopted by all apothecaries in this country."¹

In spite of a definite decision on the groups of remedial agents to be dealt with in the proposed Pharmacopœia and the assignment of the special "classes" to those physicians who were regarded as experts in the fields concerned, no practical results were achieved.

The Annals of the Royal College of Physicians of London, in December 1594, reported a change in the commission for "the examination of our dispensatory." Then for twenty years silence prevailed. It was not until the twenty-fifth of June 1614 that the plan for a "common dispensatory to be kept in the apothecary shops" was mentioned again in the Annals. From then on the project developed rapidly. On the thirtieth of September 1617 the president of the Royal College of Physicians of London, Dr. Atkins, told the Fellows that the Pharmacopœia was "on the point of completion."²

Under date of May 7, 1618, the long-expected book appeared. Apparently the demand was so urgent that the printer sold a part of the issue before the King's proclamation of April 26, which declared the Pharmacopœia obligatory for all of England, was delivered to the printer and could be included in the book.

The only copy of the May issue of the London Pharmacopœia 1618 hitherto discussed in the literature concerned (*i. e.*, that preserved in the British Museum) belongs to this part of the issue. It does not contain the King's proclamation. The page concerned is left blank, while another copy acquired by the late Charles LaWall and now in the library of the Philadelphia College of Pharmacy and Science, and a third one in the Historical Library of the Yale University School of Medicine, bear the royal manifesto.³

The sale must have gone on fairly well when

something without precedent and without repetition in the history of European pharmacopœias happened. The work was called in to be recast. "Within four months (namely on 5th September following) arrangements were made for a new edition, which appeared on the 7th December, 1618."⁴ The Pharmacopœia of May 7, 1618, was the first edition in fact; that of December 7 of the same year became the "first edition" by dictum.

There is one official explanation of these remarkable happenings in the form of an epilogue to the second issue directed to the reader of the book. This epilogue, translated from the Latin, reads as follows:

"We now edit the London Pharmacopœia in a second endeavor, with more fortunate result. We (I say) edit. For that previous unformed as well as deformed [book], may we say the hasty printer has edited it? On the contrary he hurled it into the light. As a blaze flares up from a fire and in a greedy famine deprives the stomach of its still unprepared food, so the printer snatched away this little work not yet finished off from our hands, without consulting the president, yea even during a time when the latter, who took care of corrections and polishing most thoroughly, was out of town because of a call. After his return the president found with indignation the concoction which had crept into publicity defiled with so many faults and errors, incomplete and mutilated because of lost and cut off members. Having convened his colleagues in his home, the president has called in the whole work to which he had devoted so much care for recasting and has matured a new edition. Now this book finally appears purer as to faults and more complete as to remedies. Its future is to be the more fortunate if your confidence and benevolence will support it."

This epilogue forms the basis of all later explanations in the literature of the withdrawal of the first issue of the London Pharmacopœia and its replacement by another. Munk writes that the issue of May 7, 1618, was published "surreptitiously and prematurely, by the printer in the absence of the President."⁴

C. J. S. Thompson and A. C. Wootton deal

Presented to the Section on Historical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION. Excerpt from pharmacopœia reproduced through courtesy of State Historical Society of Wisconsin.

in more detail with this unfortunate printer.

Thompson makes the following statement:

"The printer E. Griffin at the sign of the 'White Lily' was therefore admonished and, the publication being taken out of his hands, it was reissued on December 7th of the same year, with the errors corrected, by John Marriott at his shop in Fleet Street."⁶

A. C. Wootton writes: "This presumptuous printer was one John Marriott, at the inappropriate sign of the White Lily, in *platea vulgo dicta* Fleet Street."⁶

The statements of Wootton as well as of Thompson are misleading.

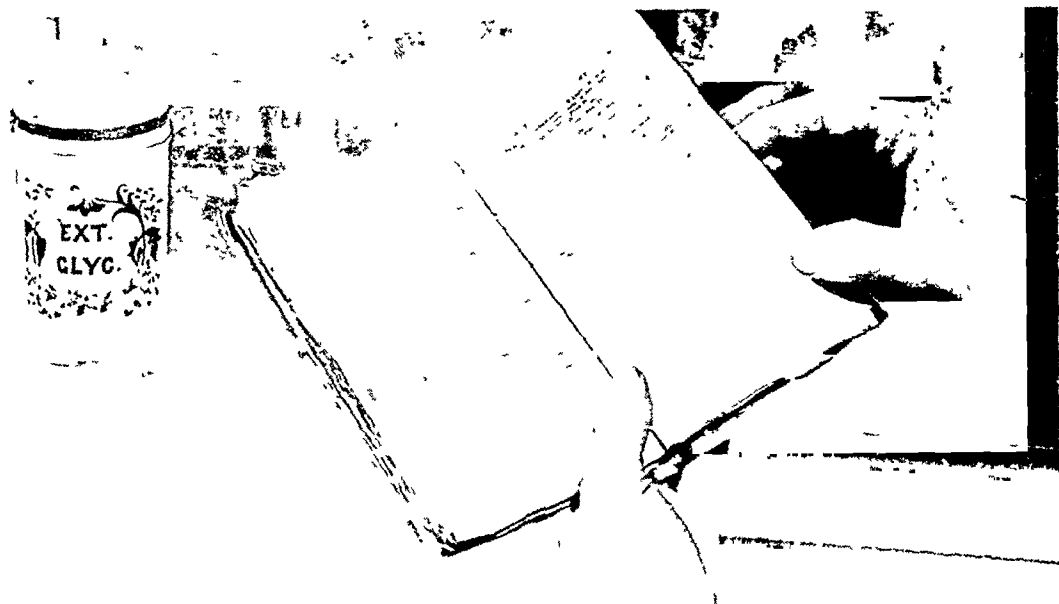
The title page of the first issue tells that Edward Griffin printed the book "*sumptibus* Joannis Marriot", i. e., at John Marriot's expense. The title page of the second issue does not mention the name of the printer but merely states "printed for John Marriot." Thus it is evident that J. Marriot was the publisher of both issues

real reason of its withdrawal. Even a very casual comparison of the two issues reveals differences of a very essential and by no means merely typographical nature.

In consequence of such a casual comparison, the author of an unsigned editorial in the well-known British journal, *The Chemist and Druggist*, remarked:

"It may well be that the prefaces to the two volumes . . . furnish another instance [other than that officially given] of the proverbial antipathy between May and December."⁸

Translation of the prefaces to the two volumes, from the Latin of the original into English, proved that there were no substantial differences. Besides a few editorial changes the preface of the first issue was literally taken over into the second book, a procedure quite consistent with the evident intention of the epilogue not to admit fundamental changes to be in existence and



He turned the job of printing of the first issue over to Edward Griffin whose printing shop enjoyed a good reputation⁷ and it is by no means impossible that Griffin also printed the second issue though, because of the ominous epilogue, anonymously.

Statements in the literature as to the punishment of the printer (publisher) of the first issue of the London Pharmacopœia 1618 having proved to be incorrect, it seemed the more questionable whether indeed the technical defects were the

to have been the reason for the second issue.

Hence, the decisive question was whether there were such fundamental changes and if so whether they, perhaps in connection with some facts of minor importance, could be regarded as the real reasons for the preparation of the second issue of the Pharmacopœia Londinensis 1618.

To get this question answered and to really unveil the mystery about the first official English pharmaceutical standard, a thorough comparison of both issues not only had to be made, but the

scientific and general background had to be investigated. It seemed finally necessary to gather as much information as possible about the persons who might be regarded as responsible for the preparation of the two different issues.

It was at the initiative of my late friend Dr. Edward Kremers who had provided photostatic copies of both issues from the British Museum some years ago, and with the financial support of the Hollister Pharmaceutical Library Fund of the State Historical Society of Wisconsin, that I carried through the investigations mentioned.

The results thereof together with a facsimile reprint of the first issue of the London Pharmacopœia 1618 have just been published in book form.*

As pointed out, the preface to the first issue is, without any substantial change, taken over into the second book. In this preface the authors state clearly their intention to replace the "confusing abundance" of older formularies by a book that is "neither obviously lacking in medicaments nor crammed with them."

This intention has been fully realized in the first issue. Can that be said of the second issue also? In fact, it cannot. The second issue contains 963 formulas for "composita" instead of the 712 of the first issue and lists 1190 "simplicia" instead of the 680 of its predecessor. Nevertheless, the mere fact of augmentation, though a deviation from the principles announced in the preface, cannot be regarded as a decisive factor. Only an obvious effect of this augmentation on the character of the book may be considered conclusive. Such an effect could be definitely proved.

1. The Simples

(a) The list of simples has been changed from an enumeration of those drugs called for in the preparation of compounded medicaments, for which formulas and directions are given, to a comprehensive survey of the entire materia medica of crude drugs in common use at that time. Not only was the title of this catalog of simples changed accordingly, the list became an important source of general information. Consequently, it was taken from the rear of the book and placed before the formula part thereof.

(b) In addition to the increase in the number of simples, several new features have been introduced, namely synonyms and permissible surrogates. From the number of such additions the

intention becomes apparent to supply an informative survey, not merely to catalog the simples required to make the composita.

2. The Compounded Remedies

(a) Not only has the number of formulas been increased considerably in the second issue, but again and again the authors refer to further preparations "omitted intentionally."

(b) The part devoted to formulas is interspersed with explanations, suggestions, references and even definitions.

(c) An increase in the number of chemical preparations is further evidence of the general tendency toward completeness.

3. Chapters of a General Character

(a) Extracts and vegetable salts: Although only a general method of preparation is given in both issues for extracts and vegetable salts, the number of examples was augmented in the second issue.

(b) Interpretations of generic terms: In the first issue the interpretation of generic terms is restricted to those most commonly employed. In the second issue these interpretations have been greatly extended and reveal the intention to cover the entire field just as completely as possible.

The first issue of the London Pharmacopœia of 1618 represents the type of unpretentious formulary designed exclusively to serve immediate practical purposes and to guarantee uniformity in the preparation of remedies generally recognized and in common use. In accordance with the principles laid down in the preface, it avoids all superfluity.

The second issue represents the more pretentious pharmacopœial combination of formulary and textbook, with the purpose of giving general information and also a survey of the entire materia medica, *simplicia* and *composita*. Contradicting the principles laid down in the preface, it is replete with that superfluity which the authors of the first issue had condemned as "the disease to be counteracted."

There can no longer be any reasonable doubt that the withdrawal of the first issue was due

* The excellent reproduction of the Pharmacopœia Londinensis together with a full report of Dr. Urdang's investigation of its unusual history is available from Schuman's, 20 E. 70th St., New York 21, at \$12.—THE EDITOR.



PILVLÆ PVRGANTES LENIORES SINE SCAMMO- NIO AVT COLOCYNTHIDE &c.

PILVLÆ ALEPHAN- GINÆ SIVE AROMA- TICÆ, MES.

℞ Cinnamomi.
Caryophyllorum.
Cardamomi.
Nucis Moschatæ.
Macis.
Calami Aromatici.
Carpobalsami, aut scm. Ange-
licæ.
Schœnanthi.
Ligni Aloes.
Santali Citrini.
Rosarum rubrarum.
Absinthij ficci ana. vnciam di-
midiam.
Hæc crassiusculè trita, maceren-
tur per horas duodecim in aquæ
libris quatuor. deinde igne lento
bulliant ad tertiæ partis absumpti-
onem. In colatura nutriatur
Aloes libra vna.

Tum absumpta aquea humiditate
super cineres calidos, aut in hypo-
causto adde

Myrrhæ.

Mastiches ana. vnciam dimi-
diam.

Croci drachmas duas.

Syrupi de Absinthio q. s.
fiat Massa s. a.

PILVLÆ DE ALOE LOTA.

℞ Aloes lotæ cum succo Rosarū
pallidarum vnciam vnam.
Agarici Trochiscati drachmas
tres.
Mastiches drachmas duas.
Specierum Diamoschi dulcis
drachmam dimidiam.
Syrupi è rosis pallidis q. s.
fiat Massa s. a.

N

PIL-

to the victory of one principle over another, not to technical deficiencies of the doomed book. The tale of the "presumptuous printer" who was blamed for the "surreptitious and premature" publication of the manuscript which had "not yet [been] finished off" may be added to the long list of similar purposeful pretexts so well known to history.

Who Were the Victors?

The victory of a different principle being a proved fact, the question has to be answered: who were the victors; who were the men who prepared the London Pharmacopœia of December 7, 1618, or were at least responsible for it?

There are differences between the two issues which are of a definitely personal character. Among the many formulas of the first book to which author names are added, are three with the names of older members of the College attached to their titles. In the second issue these names are the only names omitted. Of the members of the Royal College of Physicians of London whose names were included in the first issue, only four carried titles designating them as physicians associated with royalty in one official capacity or other. In the second issue, five additional persons were thus distinguished. In addition, the seven members acting as electors were thus designated.

It is understood that the younger generation was most opposed to every kind of discrimination, which of necessity was to the advantage of the older members of the College. This group was naturally interested in a change. Such a change could be brought about only by the withdrawal of the first issue and its replacement by another.

Nevertheless, these personal grievances—as much as they may have mobilized the individuals concerned—would not have been effective without a general dissatisfaction with the character of the work of the older generation.

This assumption may find its confirmation and explanation in the change from the Renaissance to the Baroque spirit which was taking place at that time. Revived antique simplicity was giving way to abundance and even superfluity. Effective display, not immediate practical objective, dominated mind and action. Influenced by this new trend, the younger generation may well have been disappointed by the simplicity of the first issue of the London Pharmacopœia 1618. They certainly missed formulas which they were in the habit of prescribing. But they may have missed professional display even more. It is not

impossible that they considered the absence of the display of knowledge as an affront to the dignity of the Royal College of Physicians, their illustrious society.

It is understandable that neither of the two parties within the College wanted the differences between them, leading to the issue of the second book, to become obvious. That would have been detrimental to the authority of the College, hence to all of its members. In all probability it is for this reason that the preface remained unchanged, that the fundamental changes in the second issue have found no official mention whatsoever, and that the famous epilogue to the book of December 7, 1618, represents so definite an attempt at letting the typographical errors, etc., of the first issue appear to be the sole reason for its replacement.

As far as the sources available permitted, the mystery about the London Pharmacopœia 1618, prevailing for more than three centuries, has been unveiled. However, the investigation has not been restricted to this point only. The attempt has been made to determine and to explain the medico-pharmaceutical situation around 1600 and the place of the first official English pharmaceutical standard within this situation.

Of the results of this part of the investigation only one may be mentioned here. Both issues list in the catalog of simples a considerable number of animals, parts of animals and excrements—a total of 57 in the first book and 193 in the second. Wherever the London Pharmacopœia 1618 has been commented upon since the middle of the eighteenth century (these comments were always devoted to the second issue), it was with deprecatory criticism because of the abundance of nauseous drugs and especially of excrements listed.

In fact there is little reason for such an attitude. As the investigation showed, most of the animals, parts of animals and excrements concerned are taken from Dioscorides' *De Materia Medica*. Furthermore, none of the excrements listed has been prescribed for an internal compounded remedy. Of the urines, which are listed in the second issue exclusively, not a single one enters into the compounded remedies of the Pharmacopœia, either for internal or external use.

Thus it becomes apparent that the criticism mentioned is a typical example of injustice based on the standards of a later period.

With all its abundance and its peculiar eloquence the second issue of the London Pharmacopœia 1618 is charmingly representative of the

rhetoical spirit and phraseology that followed the Shakespearean (Elizabethan) period and which, with few exceptions, dominated European literature for a century.

REFERENCES

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2. *Ibid*, III, p 374.

3. For information about the copy owned by the Philadelphia College of Pharmacy and Science the author is indebted to Dr John N McDonnell, for information about the copy in the Cushing Collection at Yale to Dr John Fulton.

4. Munk, William, *loc. cit*, III, p 375.

5. Thompson, C J S, "The Mystery and Art of the Apothecary," Philadelphia, 1929, p 142

6. Wootton, A C, "Chronicles of Pharmacy, II," London, 1910, p 61

7. Plomer, Henry R, "A Dictionary of the Booksellers and Printers Who Were at Work in England, Scotland and Ireland from 1541 to 1667," London, 1907, p 86.

8. *The Chemist and Druggist*, 106, 797 (1927).

SOME PROSPECTIVE MEDICAL USES OF ATOMIC ENERGY

by WILLIAM F. BALE

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AT THE University of Rochester the peacetime application of controlled atomic energy to medicine is not considered something that will first require five, ten or twenty years of technological research as is likely true in the peacetime industrial use of atomic power. Rather, in this field, materials which can now easily be rendered available from the Manhattan Project have been sought and the possibilities of their use eagerly anticipated over a period of several years.* Their immediate application is so certain that it can be predicted with considerable assurance that it is by advances in therapeutics, in medical science, in biology, and in chemistry that the greatest peacetime rewards will be associated directly with the next ten years of the "atomic age."

Chain-reacting Uranium Piles, such as those located at Hanford, are sources of neutrons and other radiations equivalent to more than a million cyclotrons. It is these neutrons that are used to produce the new element Plutonium, an explosive component of the atomic bomb. But these same neutrons may also be used to produce in quantity long-lived radioactive carbon and hydrogen. These elements will make possible, for the medical research worker, the labeling with radioactivity of those organic compounds that play essential roles in the animal and human body, both in health and disease. Almost every organic chemical entity of possible concern in

biology or medicine contains one or both of these elements in key structural positions. This means that by the proper chemical or, if necessary, biological synthesis it will be possible to obtain most organic compounds of medical or biological interest with radioactive labels.

To one acquainted with medical research, some evaluation of the possibilities opened by this work may be gained by a consideration of the vast amount of work done and useful information accumulated by work with radioactive elements hitherto available: radio-phosphorous, iron, sodium, iodine, strontium, sulfur and potassium being the most prominent. None of these elements is comparable in its usefulness to radio-carbon or hydrogen in the field of medical research, since each one is usually absent or only loosely attached to the key structural groups of most organic compounds.

At Rochester the Physics Department cyclotron has for eight years been producing other artificially radioactive and therefore labeled atoms for medical research. The extent of their use may be indicated by the more than two hundred scientific papers in which the results of investigations with labeled atoms have been reported. But now the availability of that key element, carbon, in radioactive form, hitherto known only in traces produced by the cyclotron, opens the whole field of organic compounds to the tracer technique.

Radioactive carbon will have important applications in cancer research, in pharmacology, in biology, in medical therapeutics and in medicine in general. There is one other field in which its use is likely to be of outstanding importance. Most of the triumphs of modern medicine have

* In addition to conducting extensive medical experiments over a number of years with radioactive tracer elements produced by the cyclotron, the University of Rochester has, for the past two years, investigated health hazards and protective measures for workers on nuclear fission. Dr Stafford L. Warren, chief of the University's department of radiology, has headed the medical section of the Manhattan engineering district.—THE EDITOR

occurred in the treatment of acute infectious processes and in the advance of surgical techniques. In contrast, comparatively little is known concerning methods of delaying that gradual impairment of body functions that we describe as aging, or about combating the degenerative diseases that so often develop even in middle age or comparative youth. With better control of childhood and acute infectious diseases, chronic degenerative changes of the heart, blood vessels and kidney, together with cancer, account for higher and higher portions of reported deaths; while arthritis, seldom killing by itself, is a major cause of disability and crippling.

Research in these difficult fields has lagged, perhaps because of the more spectacular and easily made triumphs in other fields of investigation. It seems fair to say that a very large portion of the basic research on aging and the degenerative diseases remains yet to be done. We still need to know fundamental things such as how much of a cell is formed permanently during its early development, and what portion is renewed from metabolites supplied by the blood stream. We need to know what factors are important in cell and tissue regeneration and whether we can influence its speed and magnitude in any way. How do the different types of tissue cells in an aging animal differ in their metabolism from cells of the young and early adult animal?

In the rat, an animal that grows continually during its life span, reduction in food intake leads to a very significantly longer life, and much later onset of degenerative changes. Do we have here a clue to prolonging the life of other mammals including man? Comprehensive metabolic studies using tracer techniques should provide a basic foundation of knowledge from which it may be possible to obtain an insight leading to an increasing human adult span of productivity and pleasant existence. These new tools are of such fundamental importance that they will soon see nation-wide and world-wide use.

THIOURACIL REPRINTS

Reprints of the collaborative report on thiouracil, which appears elsewhere in this issue, are available. Send a copy to each of your physicians with an announcement that the drug is in stock. Up to five reprints without charge on request to *THIS JOURNAL* (additional copies five cents each). Please enclose stamped envelope.

N. F. CHAIRMAN ADDRESSES MEETING OF MANUFACTURERS



Dr. Justin L. Powers, chairman of the N. F. Committee and director of the A. Ph. A. laboratory, is shown above addressing the meeting of the American Pharmaceutical Manufacturers' Association in New York. Plans for the eighth edition of the National Formulary call for publication this spring, he announced, and more than 85% of an estimated 800 pages is now in galley proof.

In revising the official compendia, Dr. Powers indicated that every effort has been made to bring about uniformity between the N. F. and U. S. P. in general features which both books have in common.

Pointing out the trend toward greater use of the metric system, he mentioned that the new N. F. will emphasize this system by printing metric doses in boldface type, followed by approximate equivalents in the apothecaries system in parentheses and less prominent type.

In addition to some 80 unofficial drugs to be newly admitted to the N. F., 102 drugs now official in the U. S. P. will be included in N. F. VIII. Since the deletion of a drug from the Pharmacopœia does not mean that it immediately becomes obsolete, it is usually desirable and even essential, Dr. Powers pointed out, to continue to provide official standards.

NEW AND NONOFFICIAL REMEDIES

recently accepted by the

COUNCIL ON PHARMACY AND CHEMISTRY, AMERICAN MEDICAL ASSOCIATION

Council descriptions of drug products are published regularly in This Journal as they are accepted. Rules upon which the Council bases its action appeared in the November, 1945 issue (6: 329, 1945) and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago 10.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1945, p. 202).

The following dosage form has been accepted:

VOGEL LABORATORIES, MOHEGAN LAKE, N. Y.

Emulsion Sulfathiazole 5% and 10% Sterilized: 50 cc. and 200 cc. bottles. A 5 per cent or 10 per cent suspension of sulfathiazole in an emulsion of beeswax, liquid petrolatum, triethanolamine and water.

STAPHYLOCOCCUS TOXOID (See New and Nonofficial Remedies, 1945, p. 565).

The following dosage form has been accepted:

AYERST, McKENNA & HARRISON, LTD., NEW YORK

Staphylococcus Toxoid: 3 cc. vials containing in each cubic centimeter the toxoid derived from 20,000 necrotizing doses of toxin. Preserved with 1:20,000 merthiolate.

PENICILLIN (See New and Nonofficial Remedies, 1945, p. 214).

The following additional dosage forms have been accepted:

MERCK & Co., INC., RAHWAY, N. J.

Penicillin Sodium: Vials containing 200,000 Oxford Units.

Penicillin Calcium: Vials containing 200,000 Oxford Units.

SULFADIAZINE (See New and Nonofficial Remedies, 1945, p. 185).

The following dosage form has been accepted:

VOGEL LABORATORIES, MOHEGAN LAKE, N. Y.

Emulsion Sulfadiazine 5% Sterilized: 50 cc. and 200 cc. bottles. A 5 per cent suspension of sulfadiazine in an emulsion of beeswax, liquid petrolatum, triethanolamine and water.

DIPHENYLBANOTIN SODIUM (See New

and Nonofficial Remedies, 1945, p. 528).

The following dosage form has been accepted:

PREMO PHARMACEUTICAL LABORATORIES, INC., NEW YORK

Capsules Diphenylhydantoin Sodium: 0.03 Gm. and 0.1 Gm.

THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1945, p. 388).

The following additional dosage form has been accepted:

ERNST BISCHOFF COMPANY, INC., IVORYTON, CONN.

Solution Aminophylline: Ampuls 0.24 Gm. in 10 cc. and 0.48 Gm. in 2 cc.

BACTERIAL VACCINE MADE FROM HEMOPHILUS PERTUSSIS.—Pertussis vaccine.—Whooping cough vaccine.—A sterile suspension of killed pertussis bacilli (*Hemophilus pertussis*) of one or more strains showing the characteristics of phase I as described by Leslie and Gardner. The suspension is contained in isotonic solution of sodium chloride or other suitable diluent. The vaccine may be dispensed as a simple suspension, commonly known as "plain vaccine," or as an alum precipitated or aluminum hydroxide adsorbed suspension. The vaccine shall contain in each cubic centimeter not less than 10 billion organisms. The vaccine may be dispensed by itself or in combination with one or more other antigens, provided the combination does not lessen the antigenic value of the pertussis vaccine or otherwise make the product unsuitable for human use.

Actions and Uses.—Well-controlled field studies indicate that pertussis vaccine possesses sufficient antigenic value to afford considerable protective value against whooping cough. The effect in lowering the death rate is even more striking than its effect in preventing an attack of the disease, since cases do occur in spite of the previous injection of vaccine, but such cases are usually less severe.

Dosage.—The most satisfactory dose has not been established adequately. In general, the vaccine when used as a plain vaccine should contain not less than 15 billion organisms per individual injection, with the total dose representing at least 45 billion, preferably much more. When used as precipitated vaccine the individual injection should contain not less than 10 billion organisms, with a total dose of 30 billion or more organisms. Pending more com-

plete knowledge it is suggested that the user be guided by the dosage recommendation given on the manufacturer's product, since this represents the dosage accepted by the investigators whose methods have been used in preparing the vaccine.

CUTTER LABORATORIES, BERKELEY, CALIF.

Pertussis Vaccine Phase I Concentrate: 5 cc., 20 cc. and 50 cc. vials. *H. pertussis* 20,000 million per cubic centimeter. Preserved with phenol 0.25 per cent and merthiolate 0.002 to 0.005 per cent.

THE NATIONAL DRUG COMPANY, PHILADELPHIA

Pertussis Vaccine (Double Strength): 6 cc. vial (one immunization), 12 cc. vial (two immunizations) and 25 cc. vial (four immunizations). *H. pertussis* 20,000 million per cubic centimeter. Preserved with merthiolate 1:10,000.

SHARP & DOHME, INC., GLENOLDEN, PA.

Pertussis Bacterin "H" Strength: 5 cc. and 20 cc. vials. 20,000 million *H. pertussis* per cubic centimeter. Preserved with phenol 0.5 per cent.

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Pertussis Vaccine (Single Strength): 24 cc. vials. 20,000 million *H. pertussis* per cubic centimeter. Preserved with phenol 0.5 per cent.

Pertussis Vaccine (Double Strength): 5 cc. and 20 cc. vials. 20,000 million *H. pertussis* per cubic centimeter. Preserved with phenol 0.5 per cent.

PERTUSSIS VACCINE ALUM PRECIPITATED.—A bacterial vaccine prepared from alum precipitated, killed *H. pertussis*.

Actions and Uses.—Same as Bacterial Vaccine made from *H. pertussis*.

Dosage.—Three 1 cc. subcutaneous injections of 10,000 million or 15,000 million *H. pertussis* at three to four week intervals.

THE NATIONAL DRUG COMPANY, PHILADELPHIA

Pertussis Vaccine (Alum Precipitated): 3 cc. vial (one immunization) and 10 cc. vial (three immunizations). 10,000 million *H. pertussis* per cubic centimeter. Preserved with merthiolate 1:10,000.

PERTUSSIS VACCINE COMBINED WITH DIPHThERIA TOXOID.—A combination of pertussis vaccine with diphtheria toxoid.

Actions and Uses.—Employed in the simultaneous immunization of susceptible persons against diphtheria and whooping cough.

Dosage.—Three doses of 1 cc. at three to four week intervals.

THE NATIONAL DRUG COMPANY, PHILADELPHIA

Diphtheria-Pertussis Combined Vaccine (Alum Precipitated): Three 1 cc. vials (one immunization) and three 5 cc. vials (five immunizations). 10,000 million *H. pertussis*, 0.5 cc. diphtheria toxoid immunizing dose. Preserved with merthiolate 1:10,000

SHARP & DOHME, INC., GLENOLDEN, PA.

Diphtheria-Pertussis Antigens Combined (Alum Precipitated): 10 cc. vials (three three-dose immunizations). 10,000 million *H. pertussis* diphtheria toxoid immunizing dose. Preserved with phenol 1:50,000.

PERTUSSIS VACCINE COMBINED WITH DIPHThERIA AND TETANUS TOXOIDS.—A combination of pertussis vaccine with diphtheria toxoid and tetanus toxoids.

Actions and Uses.—Employed in the simultaneous immunization of susceptible persons against whooping cough and diphtheria.

Dosage.—Three subcutaneous injections of 1 cc. at three to four week intervals.

THE NATIONAL DRUG COMPANY, PHILADELPHIA

Diphtheria-Tetanus-Pertussis Combined Vaccine (Alum Precipitated): Three 1 cc. vials (one immunization) and three 5 cc. vials (five immunizations). 10,000 million *H. pertussis*, diphtheria toxoid and tetanus toxoid 0.33 cc. each per cubic centimeter. Preserved with merthiolate 1:10,000.

REPORT OF COUNCIL ON PHARMACY AND CHEMISTRY

PREPARATIONS EXEMPT FROM COUNCIL CONSIDERATION.—The following official preparations have been declared exempt from Council consideration for inclusion in New and Nonofficial Remedies, as their actions, uses and nature are sufficiently well understood by physicians not to require such inclusion.

This list has been adopted for publication so that it may be brought to the attention of all manufacturers and other interested groups. From time to time there may be added other drugs, the names of which will also be published.

Iron and Ammonium Citrates
Ferrous Sulfate
Calcium Gluconate
Antimeninococcic Serum
Liver and Stomach Preparations included in U. S. P.
Digitalis Preparations included in U. S. P.
Acetylsalicylic Acid
Caffeine with Sodium Benzoate
Carbon Dioxide
Oxygen
Oxygen-Carbon Dioxide Mixtures
Chlorinated Paraffin (Chlorococsaene)
Cinchophen
Neocinchophen
Dextrose Solution
Sodium Chloride Solution
Isotonic Solution of Three Chlorides
Sodium Citrate
Sodium Biphosphate
Magnesium Sulfate
Trioxymethylene (Paraformaldehyde-U. S. P. X)
Methylene Blue
Quinine and Urea Hydrochloride
Salicylic Acid
Sodium Salicylate
Natural Oil of Sweet Birch (Methyl Salicylate)
Pentobarbital Sodium
Papaverine Hydrochloride
Emetine Hydrochloride
Totaquine
Tribasic Calcium Phosphate
Magnesium Trisilicate
Tribasic Magnesium Phosphate
Ichthammol Preparations
Strophanthin

A. Ph. A.

C. S. Brinton, retired chief of the Philadelphia Station of the Food and Drug Administration, was the guest speaker. He reviewed the development of food and drug regulation, both state and national, concluding with a discussion of present legislation.

CANAL ZONE—Secretary Cady announced that membership invitations had been extended to several pharmacists on the isthmus who were not yet associated with the branch. Plans were discussed to hold a future meeting at the leper colony of Palo Seco, where arrangements would be made to have a physician conduct the members through the institution.

PHILADELPHIA—Dr. John C. Krantz, Jr., of the University of Maryland School of Medicine discussed "The Mechanism of Action of Certain Anti-infective Drugs" at the December meeting.

A letter received at national headquarters from President Mitchell of the U. S. Civil Service Commission replying to objections to Announcement A-404 was read and discussed. A motion was passed expressing dissatisfaction with Mr. Mitchell's statement and offering help to the parent organization to rectify the situation. Letters were also authorized to be sent to the Surgeon General of the Army requesting action in keeping with the spirit and the letter of the Pharmacy Corps Act.

For the professional relations committee, Dr Blythe gave a résumé of papers to appear in the *P. A. R. D. Bulletin* and *Philadelphia Medicine*.

WESTERN NEW YORK—About a hundred pharmacists attended the joint dinner session of the A. Ph. A. branch and the Western New York Retail Druggists Association. Alexander Fisch of the State Department of Labor presented an interpretation of the new Retail Trade Minimum Wage Standard Order, which affects women and minors employed in pharmacies. Frank Smith, supervisor of the N. Y. State Bureau of Narcotic Control, discussed phases of narcotic dispensing in the retail pharmacy.

ST. JOHN'S COLLEGE—Members at the November session heard Frederick D. Lascoff, a leading pharmacist and president of the New York

A. Ph. A. branch, express his conviction that today's trend is toward more professional operation of retail pharmacies. Emphasizing the importance of keeping up with modern trends, Dr. Lascoff urged the students to read their professional journals regularly after graduation.

Dr. Raubenheimer introduced the speaker, and Miss Wassily, vice-president, presided over the meeting.

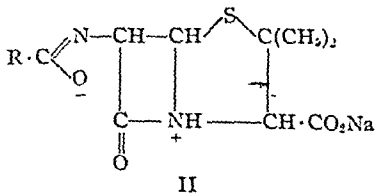
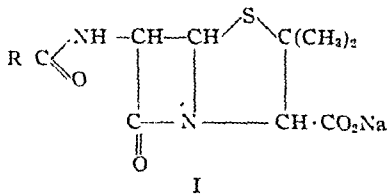
At a business session the following week the College freshmen were invited to join the A. Ph. A. and Dr. Raubenheimer reviewed the current activities of the parent organization and the accomplishments of its nearly one hundred years of professional service.

PURDUE UNIVERSITY—Student membership has increased from 30 to 85, and the branch has scheduled a number of events, both social and educational, for the year. New officers for 1946 are Gene Yoder, president; Virginia Reynolds, vice-president; Steve Sielski, treasurer; and LaVonne Anson, secretary.

JOINT REPORT PUBLISHED ON
CHEMISTRY OF PENICILLIN

A summary of the chemistry of penicillin, as revealed by experiments to date, has been published by the Committee on Medical Research of O. S. R. D. and the British Medical Research Council (*Science*, 102: 627, 1945). The several antibiotics of the penicillin class all have the empirical formula $C_9H_{11}O_4SN_2R$.

Present views concerning the structural formula of the penicillins have centered on a β -lactam structure (I) and an incipient azlactone grouping (II) shown below:



The preliminary information published represents collaborative studies by 17 British research groups and 21 groups in the United States.

SOME ORGANIC CHEMICALS

by C. LEE HUYCK*



INVESTIGATIONAL work reported in this paper describes some larger-scale experiments with alcoholic solution of methyl cellulose (Tylose), polyvinyl alcohol, cetyl alcohol-mastic solution and cellulose acetate phthalate as enteric coatings for tablets. The usual *in vitro* disintegration test was used as the basis of judgment as to whether or not the coatings were satisfactory.

The history and literature of enteric coatings have recently been comprehensively reviewed by Thompson and Lee.¹ Reviews have also been published by Chilson² and Lesser³, while developments of the past five years have been described by Volwiler and Moore,⁴ Maney and Kuever,⁵ Brenner,⁶ Abbott and Allport,⁷ Hodge, Forsynth and Ramsey⁸ as well as Thompson and Lee.⁹

Volwiler and Moore⁴ have patented the use of a stearic acid-phthalic anhydride-glycerol condensation product as an enteric coating for pills, capsules and tablets.

The comprehensive study by Maney and Kuever⁵ covered the following points: (a) construction of a mechanical device for testing enteric coatings, (b) correlation of results of the mechanical laboratory method with results of roentgen ray examinations of the tablets in the gastrointestinal tract, (c) tests to determine to what extent tablets now on the market vary in disintegration time, (d) examination of the physiological conditions in the gastrointestinal

tract to determine the type of coating which will resist the stomach fluids but disintegrate in the intestinal fluids, (e) development of a satisfactory enteric coating, which consisted of 68% myristic acid, 25% hydrogenated castor oil (opal wax), 2% castor oil, 1% cholesterol and 4% sodium taurocholate.

Brenner⁶ tested an enteric coating solution consisting of 25 parts shellac, 5 parts castor oil and 95 parts of 96% alcohol. When the thickness of the coating was 26 to 39 microns,[†] the tablets began to dissolve after seven hours in artificial gastric juice and after 100 minutes in artificial intestinal juice. These results were checked *in vivo* by X-ray, the tablets disintegrating sixteen hours and ten minutes after ingestion. This confirms the work of others who demonstrated that the upper portion of the small intestine is slightly acid or neutral, and it takes some time for the acid of the stomach to be neutralized in the intestine.

Abbott and Allport⁷ tested keratin; salol; salol-shellac; salol-benzonaphthol; salol-stearic acid-shellac, stearic acid-carnauba wax-soft paraffin-agar-elm bark; magnesium stearate-mastic; shellac; shellac-wool fat; shellac-castor oil; myristic acid-hydrogenated castor oil; cetyl alcohol; cetyl alcohol-shellac; cetyl alcohol-mastic; and cellulose acetate phthalate by an "in vitro" method.

The apparatus used was unique in that it slowly supplied fresh artificial digestive juices to the coated tablets and also moved the juices around the tablets in a manner similar to that imparted by peristaltic movement of the human gastrointestinal tract.

The cetyl alcohol-shellac and the cellulose acetate phthalate coatings proved to be the most satisfactory. Cellulose acetate phthalate gave protection in artificial gastric fluid for five hours and protection in artificial intestinal fluid for one-half hour. The cetyl alcohol-shellac coating was a solution of 10% cetyl alcohol and 10% shellac in ether. The stearic acid-carnauba wax-soft paraffin-agar-elm bark coating was satisfactory from the behavior standpoint but it required special processing with machinery not available to the retail pharmacist. A coating was considered satisfactory which would withstand the action of artificial gastric juice for five hours and

* From the Research Laboratories, Wm. S. Merrell Co. The author is indebted to Dorothy E. Wolf of the Analytical and Control Research Laboratories, Wm. S. Merrell Co., for testing the tablets for disintegration.

† It will be recalled that a micron is one-thousandth part of a millimeter.—Ed.

ENTERIC COATINGS FOR TABLETS

disintegrate in the alkaline intestinal fluid within one hour.

Hodge, Forsynth and Ramsey⁸ tested tablets and capsules coated with cellulose acetate phthalate and found that they possessed satisfactory enteric characteristics. In 79% to 100% of trials in human subjects, disintegration occurred in the intestine about eight hours after ingestion.

Thompson and Lee⁹ studied the in vitro disintegration of enteric coated tablets from 6 pharmaceutical houses. There was considerable variation in the disintegration time of the coatings tested. It was clear that some of the coatings did not disintegrate at the proper place in the intestinal tract.

Stearic acid, mutton tallow, balsam tolu, iron bile salts, sodium taurocholate and ox bile in combination with each other were tested. A mixture of stearic acid, mutton tallow, balsam of tolu and iron bile salts and a mixture of stearic acid, mutton tallow, balsam tolu and sodium taurocholate showed the most favorable results in vitro in that they disintegrated in over five hours in acid pepsin solution and in one-half hour in alkaline pancreatin solution.

The standards set up by the authors were: (a) the coating should be stable to conditions in the stomach for at least five hours, (b) the coating should disintegrate in the intestine preferably within one hour.

Experimental

In our experiments the artificial gastric juice used for disintegration tests had the following formula:

Sodium chloride.....	1.4 Gm.
Potassium chloride.....	0.5 Gm.
Calcium chloride.....	0.06 Gm.
Hydrochloric acid, U. S. P.....	6.94 Gm.
Pepsin 1:10,000.....	0.97 Gm.
Distilled water, q. s. ad.....	1000.0 cc.

The formula for artificial intestinal fluid used in the disintegration tests was as follows:

Pancreatin 3X.....	0.93 Gm.
Sodium bicarbonate.....	15.0 Gm.
Distilled water, q. s. ad.....	1000.0 Gm.

METHYL CELLULOSE (TYLOSE).—Methylene blue tablets containing 1 gr. of methylene blue and 5 grs. of lactose were subcoated with 2 coats of 50% W/V shellac in denatured alcohol and 6 coats of

8.6% W/V gelatin solution containing 55% W/V sugar. The tablets disintegrated in twenty minutes in distilled water. Fifteen hundred of these tablets were coated with 5 coats of 10% alcoholic solution of Tylose SL5, using talc as a drying agent.

When tested for disintegration, using artificial gastric juice at 37.5° C., complete disintegration took place in about ten minutes, showing that this coating was of no value as an enteric coating for tablets.

POLYVINYL ALCOHOL.—A 10% aqueous solution of medium-viscosity polyvinyl alcohol RH 349 was found to be miscible with an equal volume of 3A denatured alcohol (alcohol U. S. P. denatured with methanol). Fifteen hundred methylene blue tablets were given 10 coats of this solution, with chalk as a drying agent, followed by 1 coat of 8.6% W/V gelatin solution containing 55% W/V sugar and 1 coat of 90.5% W/V hot sugar solution containing 20.2% W/V calcium carbonate.

The disintegration time of these tablets in distilled water was twenty minutes, showing that this coating was of no value as an enteric coating.

CETYL ALCOHOL-MASTIC SOLUTION.—Twelve coats of 10% cetyl alcohol and 10% mastic in acetone were applied to 1500 subcoated methylene blue tablets, with chalk as drying agent and a jet of cold air to speed the drying process. Hot air was not satisfactory as a drying agent since it caused the tablets to stick together.

These tablets disintegrated in artificial gastric juice in about one hour, showing that on the basis of this test the coating was of little value.

CELLULOSE ACETATE PHTHALATE.*—Ten coats of 5% cellulose acetate phthalate in equal parts of ethyl acetate and 3A denatured alcohol were applied to 1500 methylene blue tablets, using only cold air as drying agent. The disintegration of these tablets in artificial gastric juice was one-half to one hour.

Since the results were unsatisfactory, another experiment was carried out on a smaller scale. A few of the subcoated methylene blue tablets were placed in a glass beaker and sufficient 5% cellulose acetate phthalate was added to cover the tablets. The solution was whirled occasionally and was allowed to evaporate to dryness. The disintegration of these tablets was as follows: artificial gastric juice two and one-half hours, artificial intestinal juice one-half hour, distilled water two hours.

Discussion of Results

Mills¹⁰ tested an acetone solution of cetyl alcohol and mastic and found it to be 97.8% efficient by radiographic tests. In preparing cetyl alcohol-mastic coating solution, the ingredients

* Eastman Kodak Company, Rochester, New York.

were dissolved in acetone so that the coating could be easily sprayed on the pills or tablets. To test the efficiency of the enteric coating, barium sulfate tablets were used. The time and point of disintegration of the tablets in the alimentary canal were then determined by X-ray photographs. Ten per cent cetyl alcohol in acetone was 81.11% efficient; 10% cetyl alcohol and 10% shellac in acetone was 70.73% efficient; while 10% cetyl alcohol and 10% mastic in acetone was 97.87% efficient.

It is possible that the chalk used as a drying agent with the cetyl alcohol-mastic coating caused our unsatisfactory results when the tablets were tested by the in vitro method. Since Mills¹⁰ used an in vivo method of measuring efficiency, the tablets coated with the cetyl alcohol-mastic solution should be tested by the same in vivo method before any opinion is expressed concerning efficiency.

From the in vitro test used, it appears that Tylose and polyvinyl alcohol are of little value as enteric coatings. With cellulose acetate phthalate good results were obtained on a small scale. This leads to the suggestion that this coating might be used by the pharmacist to give hard gelatin capsules an enteric coating. The results of larger scale experimentation were unsatisfactory in that the coating did not remain intact for any length of time in artificial gastric juice.

Summary and Conclusions

1. On the basis of in vitro disintegration tests, Tylose (methyl cellulose) and polyvinyl alcohol were found to be unsatisfactory as enteric coatings for tablets.

2. On the basis of in vitro disintegration tests, cellulose acetate phthalate has possibilities as an enteric coating but more work must be done before this material can be used satisfactorily on a large scale.

3. The cetyl alcohol-mastic coating and all the other coatings reported here should be tested by the in vivo method before any definite conclusions are drawn as to their efficiencies.

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SCHOLARSHIP PLAN OFFERED APPRENTICE BY PHARMACISTS

Interested, long-term apprentices in the retail pharmacy and assurance that funds will be available to them for pharmaceutical education is the twofold benefit from an unusual scholarship plan adopted by William J. Stigall and William P. Taggart, prescription pharmacists of Chicago.

When the two high-school youths employed in the pharmacy were sufficiently experienced to warrant an increase in salary, Mr. Taggart reports that instead of paying the prevailing wage of 60 cents per hour, the following scholarship plan was offered:

(1) Wages of \$10 per week for an average of twenty hours work; (2) Two dollars per week deposited in a local bank in the name of the young man; (3) Accrued deposits and interest during high school to be used for tuition and incidental expenses for the first year at the University of Illinois College of Pharmacy; (4) Upon entering college the \$2 stipend is raised to \$5 per week and deposited in the local bank, accrued funds to be used for the second year of education; (5) At graduation there will be approximately \$260 and interest, depending on the time the plan was initiated, which becomes the property of the young man as a graduation present; (6) If for any reason the apprentice leaves the employ of the pharmacy, one-half the funds revert to the employer; (7) If for good cause it becomes necessary to discharge the apprentice, all funds on deposit become his property; (8) The employer has first call on the services of the young man after he has received his pharmacy degree and has become licensed. It is understood that the salary offered will be that prevailing in the community. In this way a talented apprentice receives an education that otherwise might be denied him. The pharmacist himself obtains a reliable, long-term assistant and increased community good will.

Mr. Taggart passes the plan along to other pharmacists "who want to keep alive the interest young boys show in pharmacy." He and Mr. Stigall feel that the plan is a step forward in promoting interest in pharmacy as a career, and the local press recognized their endeavor.

"We have discussed the plan with the boys' parents," says Mr. Taggart, "and have their approval. We have not drawn up any lengthy legal document, but man to man have shaken hands on the plan, which they know is for their own good, although it may be readily recognized that the benefits are not one-sided."

PRESCRIPTION *Information* SERVICE

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MAISON DE NAVARRE
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GEORGE L. WEBSTER
LEROY WEIDLE
ELMER H. WIRTH
LOUIS C. ZOFF

GIFFORD'S BUFFER SOLUTIONS

We have a prescription calling for Solution Gifford Acid Buffer No. 2 for an eye preparation. Please send us the formula.—H. H., New York.

Gifford's Acid Buffer No. 2, which has an approximate pH of 6, is prepared from two stock solutions as follows:

Stock solution of sodium carbonate.....	0.05 cc.
Acid buffer solution No. 1.....	30 cc.
Mix well.	

This solution is a suitable solvent for zinc salts, cocaine and epinephrine. The two stock solutions specified in the formula have the following composition:

STOCK SOLUTION OF SODIUM CARBONATE

Sodium carbonate, anhydrous	21.2 Gm.
Distilled water, previously boiled, a sufficient quantity	
To make.....	1000 cc.

Dissolve.

STANDARD ACID BUFFER SOLUTION No. 1

Boric acid, crystals.....	12.4 Gm.
Potassium chloride, anhydrous	7.4 Gm.
Distilled water, previously boiled, a sufficient quantity.	

To make..... 1000 cc.

It is well to keep these two stock solutions on

hand, for by combining them in various proportions buffer solutions can be prepared for any desired pH ranging from 5 to 9. Tables and instructions for use appear in *Pharmaceutical Recipe Book III*.

BRUSHLESS SHAVING CREAMS

Please furnish me with a formula for a brushless shaving cream. Also, where can I obtain a copy of de Navarre's Chemistry and Manufacture of Cosmetics?—J. C., Missouri.

In compounding a brushless shaving cream it is essential that a beard softener be used in conjunction with a lubricant and such bodying agents as will produce a cream of desired consistency. Two such formulas appear in *Pharmaceutical Recipe Book III*. Consistency can be adjusted by varying the amount of spermaceti if necessary. After saponification the product should be checked for excess fat or excess alkali and properly adjusted so that there is a slight excess of fatty acids.

I

Stearic acid.....	150 Gm.
Spermaceti.....	20 Gm.
Petrolatum.....	30 Gm.
Triethanolamine.....	25 Gm.
Glycerin.....	50 cc.
Perfume, as desired,	
Water, a sufficient quantity,	

To make..... 1000 Gm.

Melt the waxes and fats and heat to 70° C.

Add the triethanolamine which has been previously dissolved in the water and heated to 70° C. Stir the mixture until cooled to 40° C., and then add the glycerin and perfume.

II

Sodium borate.....	10 Gm.
Stearic acid.....	150 Gm.
White petrolatum.....	50 Gm.
Spermaceti.....	20 Gm.
Strong solution of ammonia....	20 cc.
Sorbitol, syrupy.....	60 Gm.
Distilled water.....	690 cc.
Perfume, as desired,	

To make about..... 1000 Gm.

Melt the waxes and fats. Boil the distilled water and dissolve the sodium borate; add the strong solution of ammonia, and pour the mixture into the melted fat with constant agitation. When completely saponified add the syrupy sorbitol, stir slowly until quite cold, then add the perfume.

Maison G. de Navarre's book, *The Chemistry and Manufacture of Cosmetics*, is published by D. Van Nostrand and Company, Inc., 250 Fourth Avenue, New York City. The price is \$8.

INVERTED EMULSION ADVISED

Please send me your opinion of the following and directions for compounding:

R _y Phenol.....	gfts. xxx
Magnesium carbonate,	
Zinc oxide, ā ā.....	3 iv
Olive oil.....	3 ii
Aqua Camphor,	
Aqua Calcis, ā ā, q. s.....	3 viii
—J. L., Mississippi	

When olive oil and lime water are mixed a calcium soap forms, which will in turn produce a W/O emulsion. To prepare a stable lotion, however, it is necessary to have at least 50% of oil, since this acts as an external phase for the emulsion. In your prescription we find only about 25% of oil, which is not sufficient to envelop the water phase.

Accordingly, the preferable procedure is to invert the emulsion. For lotions, the oil-emulsifying agent is Liniment of Soft Soap. If the oil is emulsified with about 1/2 ounce of the liniment, a smooth preparation results. Preparations of this type are usually tested by applying a small portion to the back of the hand as a check for uniformity of spread.

Incidentally, the magnesium carbonate and the zinc oxide both tend to produce W/O emulsions, and their presence makes it necessary to use more of the Liniment of Soft Soap than might otherwise be required.

STERILE LUBRICATING JELLY

What is the procedure for preparing a sterile lubricating jelly of the type given in Pharmaceutical Recipe Book III?—H. C., Ohio

Because of the instability of such products under ordinary sterilization procedures, the pharmacy in one large hospital solves the problem by incorporating bactericidal agents into the surgical lubricant, filling into sterile collapsible tubes under aseptic conditions and then testing for sterility. Their formula is as follows:

Tragacanth.....	400 Gms.
Locust bean gum.....	300 Gms.
Propylene glycol.....	22,700 Gms.
Boric acid.....	1,400 Gms.
Spirits lilac, 10%.....	560 cc.
Butoben.....	35 Gm.
Zephiran, 12.8%.....	15 cc.
Distilled water, to make	

74,000 cc.

The tragacanth is covered with water and allowed to swell overnight. The propylene glycol is mixed with 18 L. of water, and in this mixture is dissolved the boric acid. The soaked tragacanth is then added to the boric acid solution and stirred with a large agitator. The Zephiran solution is added to the above mixture. The Butoben is dissolved in the spirits of lilac and also added to the mixture. Enough distilled water is then added to make the final product measure 74 L. or approximately 20 gal. The material is then passed through the colloid mill and filled into sterile tubes.

The collapsible tubes have been previously sterilized by dry heat (U. S. P. process B). The finished product must be tested for sterility. An excellent medium for this purpose is Fluid Thioglycollate Medium, Linden (available from Difco Laboratories, Detroit). This medium will reveal either aerobic or anaerobic contaminants. Use of a separate solution to inactivate the bactericidal agent for the sterility test is avoided through the action of the thioglycollate and/or sufficient dilution of the inoculum. We understand that a medium of this type will be included in U. S. P. XIII.

Science News Capsules

HYDROGEN peroxide was made in Germany during the latter days of the war by oxidation of easily oxidized organic chemicals, such as 2-ethyl-anthraquinone. Although production was only in the pilot plant stage, the method seems feasible for large-scale production and is simpler and less expensive than conventional electrochemical processes. Once rated "top secret" by the Germans, a report on the new process has now been issued by the Office of the Publication Board, U. S. Department of Commerce.

DDT in minute droplets of artificial oil fogs promises to be one of the most useful and economical ways of applying the insecticide for the protection of orchards, vineyards and woodlands. Early experiments with a Navy "fog generator" have led to a similar but more satisfactory sprayer for DDT, built by the Todd Shipbuilding Corp.

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known to science, were also among the South American collection of fossils.

Only trained pest exterminators will be permitted to buy Monsanto's new *rodenticide*, 1050. The poison, extremely toxic to humans, is completely soluble in water and completely tasteless.

From South Africa comes word that nature anticipated man in manufacturing the basic ingredient of the *rodenticide* 1050. A plant bearing the Boer Dutch name "gibblur," or poison blister, was analyzed by Dr. J. S. C. Marais who found that its toxicity is due to fluoracetic acid and suggested that this acid and its compounds might be a source of valuable poisons. The natives had long been using the plant as a rat poison. American chemists made an independent discovery of the value of the same acid and its compounds without knowing of the previous South African work.

Another new *rodenticide*, alpha naphthyl thiourea, has been patented by its discoverer, Dr. Curt P. Richter of the Johns Hopkins Hospital, who has assigned rights to the government (No. 2,300,818). Experimental findings in the Baltimore warehouse area, and elsewhere by the Army, have proved successful. The poison, called "Antu" for short, is said not to be toxic to animals other than rodents except in improbably large doses.

Fewer children are likely to be born into a family where the wife attended college than where the husband had college training. Although the reproductive rate in American families tends to decrease with advance in the educational attainment of either the husband or wife, figures compiled by the U. S. Bureau of Census show that this decrease is influenced to a greater degree by the education of the wife than by the husband's schooling.

At a recent RCA demonstration of postwar television, the receiving apparatus produced black-and-white pictures bright enough for easy viewing in an ordinary lighted room. Satisfactory color television is still around the corner, RCA's President Sarnoff indicated, perhaps five years away.

Common baldness is a sequela of sexual maturation and results in most instances from stimulation by male hormone substances, according to Dr. James B. Hamilton of the Long Island College of Medicine. This would explain why most baldness is seen in men, rather than women. Avoiding tight bands, such as hats, and massaging the scalp to stimulate circulation were debunked as measures to prevent or cure this condition. Heredity and age, however, are still considered important factors.

A dissenting note in the applause for the A. M. A.'s program for nation-wide voluntary health insurance was heard from the Physicians Forum in a statement which said in part: "The Physicians Forum, comprised of doctors who are all members of the American Medical Association, has spent many years of study on the subject and has come to this conclusion: Voluntary health insurance is merely an indication of what could be accomplished on a national scale if the President's proposal assuring the health of all Americans is passed by Congress. Until their recent reversal, the American Medical Association strongly opposed even this elementary device for medical care."

Further promising results have been reported from the Harvard Medical School in the treatment of *petit mal* epilepsy with 3,5,5 trimethylvasolidine 2,1 dione. As clinical trials are not yet complete, the new drug, called Tridione for short, has not yet been released to pharmacists.

An ultra-high speed *microtome* has been developed to section plant and animal tissues for examination under the electron microscope. Sections range from 1 micron to 0.1 micron in thickness, the thinnest section thus being only about one five-hundredth of a hair's breadth thick.

A new optical instrument, called a *Rotoscope* (GE) is claimed to be the first instrument of its kind which permits continuous viewing of a rotating object at any particular point in its path of travel. For example, whirling plane propellers appear to stand still when viewed through the device.

A new *antibiotic* has been found in pure cultures of the bacterium that causes one of the most troublesome of bee diseases, American foulbrood. The discoverer, Dr. E. C. Holst of the U. S. Department of Agriculture, reports that experiments to determine possible therapeutic uses are in progress.

Neostigmine methyl sulfate (prostigmine) may turn out to be a cure for the poisonous bite of the *black widow spider*. Evidence is limited to treatment of one case at Roper Hospital in Charleston, S. C., where a single dose brought "dramatic and complete relief of muscle spasm and pain."

(Condensed from Science Service)

—R—

More than 450,000 prescriptions have been filled by Edwin Hesse, Sr., A. Ph. A. member who has just completed forty years of service in the profession.

PHARMACY OF THE FUTURE holds unlimited opportunities for interesting and successful careers for qualified young men and women. This institution offers B.Sc., M.Sc., and D.Sc. degree courses. Schools of Pharmacy, Chemistry, Bacteriology and Biology. Write for catalog. Servicemen's inquiries invited. **Philadelphia**
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Typical Days

FROM THE SECRETARY'S DECEMBER DIARY

—3rd—

FOLLOWING the customary Monday morning disposal of a very heavy mail, a lengthy conference and luncheon with Lt. Col. Nelson, one of the senior members of the Pharmacy Corps of the Regular Army who has just returned from India and is about to take an assignment in New York involving Army specifications for medical and health supplies. The experience of these Army men, who travel from India to the United States in as many hours as our forefathers took days for such trips, is highly interesting and one wonders that they come through in such healthy shape with all of the disease, lack of sanitation and inconvenience that is rampant in Mother India.

—4th—

At work with the staff on routine matters and, after a brief lunch at the desk, much preparation for several important meetings tomorrow and then to meet George Beal for dinner at the Washington Hotel, followed by an evening trip with him to the Headquarters building to confer about many plans for the New Year. Then for some "homework" before calling it a day.

—5th—

Heading the list of appointments today were representatives of certain D. C. pharmacists who are urging amendment of the Pharmacy Act to permit licensure without college graduation. Chairman Beal of the Council, unable because of weather to fly to Savannah today as originally arranged, dropped in to hear the arguments in favor of this bill which left us both unmoved and more certain than ever that the Council has taken the right position in opposing such legislation. Before luncheon came Einbeck, Frates and DuMez to discuss ways and means for implementing the desires of the Committee on Status of Pharmacists in the Government Service for action on the Pharmacy Corps in the Army and Navy. Following luncheon at the Washington Hotel this "Steering Committee" proceeded to Capitol Hill for further action, while we proceeded with the daily routine.

—6th—

This day to meet Treasurer Schaefer at Baltimore for the annual trip to the bank vault to clip coupons representing interest on the invested funds of the ASSOCIATION. Later to arrange for the investment of certain accumulated funds to the best interests

of the ASSOCIATION, and this is still a matter of purchasing government bonds. Later to Washington, and after dinner discussing with Schaefer, Swain and others the program to be considered at the National Drug Trade Conference meeting tomorrow.

—7th—

Early to the office and then to the Statler Hotel for the revived annual meeting of the National Drug Trade Conference. And it seemed like old times to have the nine national pharmaceutical organizations representing the Conference sit around the table and discuss present-day problems affecting all of us. As chairman of the Resolutions Committee there was the task of putting into words the sentiments expressed on these broad problems (elsewhere reported in this issue of the JOURNAL). Following adjournment of the Conference and a quick trip to the office to sign the mail, there came dinner at the Washington Hotel with President Moulton and long discussions far into the night about current A. PH. A. problems.

—8th—

Early to the office with President Moulton to dispose of routine business and then to receive Dr. George Urdang and his charming wife who are visitors in Washington on their way to New York. By a fortunate circumstance and with the help of Mrs. Powers and the Powers' car we were able to visit the Stabler-Leadbeater pharmacy in Alexandria and press Dr. Urdang into service for an evaluation of the stock and fixtures of this historic establishment. A pleasant and, for us, a highly instructive visit with Mr. and Mrs. Reese who have done so much through the Landmarks Association of Alexandria to preserve this historic pharmacy and who are ready to cooperate in the preservation of the pharmaceutical equipment and stock for future historical records. All in all a day well spent in splendid company and with good progress to report on a project that means much to peacetime American pharmacy of the future.

At night with Dr. Urdang at dinner at the Willard and then a long session about the future of various ventures in the field of pharmaceutical history, museum activity and international relations.

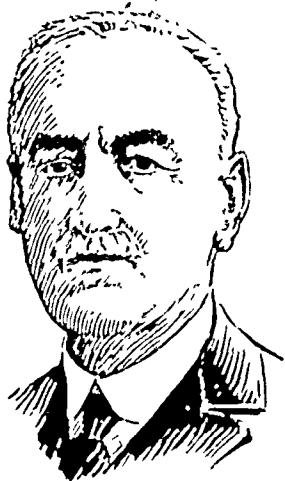
—9th—

A part of this Sunday spent with the Conference of Allied Medical Professions in the state of New Jersey, over which we have presided for a number of years and now relinquish the chair to the president of the State Nurses' Association. This project has withstood the test of time and has been a bulwark of defense against encroachment of politicians on the preserves of the professions. Later in the day to meet Justin Powers on his way from Philadelphia and after an uneventful automobile ride to Red Bank to dine and spend the night prior to a series of meetings in New York in the days to come.

—10th—

To New York for the meetings of the American Pharmaceutical Manufacturers' Association and the

Master Builders of **ENDOCRINOLOGY**



GEORGE REDMAYNE MURRAY

1865-1939



George Redmayne Murray first recorded the progress of a myxedematous patient who had been treated with a glycerin extract of sheep's thyroid gland. Glandular therapy owes much to this master builder whose keen perception, courage and imagination have helped make it possible for many to lead longer and more fruitful lives.

To dedicate our efforts to the advancement of medical science . . . to contribute in increasing measure to the practical application of knowledge in the service of mankind . . . that is the aim of Harrower research.

Special skills and knowledge, acquired during more than a quarter-century of application to the production of endocrines and pharmaceuticals of distinction, confer a continuing and growing obligation to develop products worthy of the finest traditions of medicine and related sciences.



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2. Tests for thermal shock assure the continued high performance ratings of Sani-Glas under rugged use conditions.



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You get this complete service, which makes Sani-Glas . . . of safety and . . . where, at no extra cost! Test Sani-Glas superiority—order from your wholesaler today!

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The Symbol of Quality

palm goes to Charles Wesley Dunn and his associates for staging a remarkable array of scientific talent in connection with the annual scientific award of the A. Ph. M. A. to the Rockefeller Foundation for Medical Research. And never has it been our privilege to listen to so many outstanding scientists report the latest advances in their respective fields in so short a space of time. Later to dinner at the Waldorf-Astoria with members of the A. Ph. M. A. and with a particularly friendly group at our table including George Moulton, Justin Powers, Joe Noh, recently made vice-president of Winthrop Chemical Company after several years of splendid service to the Army as head of the medical supplies Purchasing Division of the Surgeon General's Office in New York City, and others. Thankful for a good room at the Pennsylvania Hotel that night, shared with Dr. Powers.

—11th—

After an early breakfast a meeting of the A. Ph. A. Laboratory Committee at the Pennsylvania Hotel with George Beal presiding and Messrs Taylor, Cook, Powers, and Green in attendance. A careful review of the recommendations for activities in the A. Ph. A. Laboratory followed by some excellent suggestions for additions and improvements of the work at hand. In the afternoon to attend some sessions on medical care plans and other health activi-

ties, and at 6 o'clock to meet with the Joint Committee of the American Social Hygiene Association and the A. Ph. A. for the annual roundup of activities in the joint effort to combat venereal disease. Heard with much pleasure the most recent statistics showing a precipitous drop in the number who offer venereal disease remedies in drugstores. It is almost to the vanishing point. All of which pleases the American Social Hygiene Association as much as it does us. Then to the Pennsylvania Hotel for the Remington Medal Dinner at which were gathered several hundred enthusiastic friends of Joseph Rosin, the 1945 Medalist.

—12th—

All morning at the Pennsylvania Hotel working on A. Ph. A. problems and conferring by telephone and otherwise with Ballard, Klumpp, Corwin, Jennings Murphy and others. Secretary Murphy of the Wisconsin Pharmaceutical Association seems particularly alert to the store remodeling problems of retail pharmacists, and has some excellent ideas on the subject which will soon receive greater publicity. At 4 p.m. to the Academy of Medicine for an historic meeting to oppose the antivivisectionists who are planning to hamper medical research by fostering state and national legislation to prevent experimentation on animals. When men like Simon Flexner and A. J. Carlson come out of retirement to

Master Builders of ENDOCRINOLOGY



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1865-1939



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give this movement leadership, it is plain that the scientific fraternity is aroused, and well it might be. To the Pennsylvania station for the 6:30 train to Washington which was boarded several seconds in advance of departure, and landed us at the capital late as usual, but in time to reach the hotel before midnight and still sign and mail the letters which competent staff assistants had made available during the day

—13th—

Most of this day sitting with the Advisory Committee on Surplus Property to the Federal Security Agency discussing procedures for expediting the transfer of surplus property in the medical and health supply category to institutions, agencies and others entitled to such property in the field of health and medical care, and it is gratifying to learn that pharmacy colleges will be in a position to acquire needed laboratory equipment at reduced rates.

—14th—

Bidding good-bye at luncheon today to Joseph B. Burt who will soon succeed Dean Lyman at the University of Nebraska, and who has spent several years in Washington with WPB. He has wound up his activities at the national capital with a month and a half at A. Ph. A. headquarters digesting and compiling barbiturate regulations and suggested proposals for restriction of illegitimate sale of such products; also reviewing medical care plans offered by the various states with particular emphasis on the pharmacy provisions. A job well done.

—15th—

After a morning spent at the office, which was officially closed, gathering up loose ends in preparation for a trip to the Windy City, boarded an afternoon train in time to reach home for what was left of the week end.

—16th—

In the late afternoon departed for Chicago on "The Admiral." Regardless of the name of the train, these days one can prognosticate in advance that it will arrive in Chicago too late for scheduled appointments.

—17th—

And so it was. Due in Chicago at 8:25 a.m. Time of arrival: 12:45 p.m. The usual run around at the Palmer House to obtain the "confirmed" reservation. A quick trip to the Grant Hospital and a quicker sandwich lunch, and then a splendid meeting with hospital pharmacists Hansen, Francke, Stockert, Reamer and Scott assembled to consider the activities of the growing Society of Hospital Pharmacists. Sorry to learn that Sister Mary John was unable to join the group because of illness. In an intensive review of hospital pharmacy organization future plans were developed for more complete integration of the activities of the A. S. H. P. with A. Ph. A. This group recognizes how much of pharmacy's future depends on how well they meet their responsibilities. Later to dinner at the Palmer



House with Francke, Evelyn Scott and with Louise Schmitz who came from Minneapolis to conclude arrangements for joining the staff as research assistant to the A. Ph. A. secretary. There followed long discussions of plans and projects, continued later with Don Francke who is, at the moment, the moving and guiding spirit of this group, and whose *Bulletin* of the A. S. H. P. is attracting wide attention.

—18th—

To the American Hospital Association with Don Francke to talk with Dr. Hullerman about plans for the Hospital Pharmacy Institute scheduled next spring at Ann Arbor under joint auspices of A. H. A., A. Ph. A. and A. S. H. P., and the plans are well advanced. Then to lunch with N. A. B. P.'s Costello to discuss many a problem relating to pharmaceutical education and licensure. Next a visit with John Dargavel and then to the U. of Illinois Chicago campus for a two-hour conference with President-elect Series before joining the 300th meeting of the Chicago Branch of the A. Ph. A. at the Illinois Union. Here were gathered a most friendly group of pharmacists and their wives to listen to what good can come out of Washington, and we gave them a factual survey of A. Ph. A.'s aims and objectives as of 1946. The opportunity to greet many old friends and meet new active workers was well worth the trip.

—19th—

Another conference with N. A. B. P.'s efficient secretary, and thanks to him a reservation on the "Liberty Limited" this afternoon for Washington. At lunch with Charlie O'Malley laying plans for further development of our advertising program for the JOURNALS. Then for a bit of Christmas shopping before making a dash to board the train at 3:10 p.m. Hardly a half hour out of Chicago when the first of a series of engine breakdowns occurred, so lost three hours traveling from Chicago to Valparaiso, all of which augurs well for the usual "delay, linger and wait" which seems the by-word for P. R. R. these days.

—20th—

Due in Washington 8:40 a.m. Arrived 6:30 p.m. after the worst travel experience yet recorded in these columns.

—21st—

The desk piled high after an absence of four days in place of the calculated three, but much reading done on the train which expedites the dictation but does not set the calendar back from Thursday to Wednesday.

—22nd—

After the morning in the quiet of a deserted office, fortunate enough to find one unoccupied seat on a train to New Jersey and then late in the bitter cold arriving for the Christmas holidays at home.

PD. 2.

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NO. 1—Second degree burns of face and ears and third degree scalp burn covered by primary occlusive dressing on night of admission. Patient had a total burn surface of 12.5 percent.

NO. 2—As first head dressing was changed on seventh day, remnants of destroyed skin and dry serum are still present and uninfected.

NO. 3—Final view of the face on the 55th day showing absence of scarring, and normal contours. The scalp healed without grafting.

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IN describing treatment of surface wounds of burn casualties following Boston's Coconut Grove fire, this simple technique was reported as "eminently satisfactory":*

1. No debridement of burn surface.
2. No cleansing of the burn surface.
3. Bland ointment with protective dressing ("... boric acid in petrolatum is safe").*
4. Chemotherapy administered internally.

This treatment, given extensive use following the disaster* has the advantage of simplicity. There is less mani-

pulation of the patient, important in consideration of shock. There is quicker relief of pain, with less rolling as necessitated in debridement and cleansing. Earlier relief of pain, too, by prompt covering.

Since infection originates almost entirely from surface contamination following the burn injury, it is pointed out that the earlier the wound can be covered, the less the infection. Thus this simple, early covering method becomes a measure against infection.

In treatment of burn surfaces the physician will find 'Vaseline' Petroleum Jelly—plain or boricated—is prompt and effective.

*Ann of Surg. 117:885 (June) 1943.

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Journal of the

AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VII, NO. 3

MARCH, 1946

CONSECUTIVE NO. 5

Practical

Edition

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A MISTAKEN POLICY

IN A paper in the January issue Dr. Robert Elman of Washington

University, a top authority on amino acids, said:

"Many preparations are available at the present time offering the advantages of amino acid mixtures for use as a substitute for whole protein food. The pharmacist is often at a loss to know whether these preparations can be used with benefit." After setting forth criteria for such products he stated: "Before accepting products for either oral or parenteral use the pharmacist should be certain that these requirements have been met. The pharmacist must insist upon maintaining nutritional standards for amino acid mixtures and protein hydrolysates just as he does for other preparations."

Sound advice. There are some who apparently do not think so. About the time this discussion appeared in the JOURNAL a pharmacist, in response to physicians' queries, requested professional data from a leading manufacturer of amino acid mixtures. Back came the reply: "Professional literature regarding this product is sent only to members of the medical profession."

Followed to its logical conclusion, such a policy could have only one result. The retail or hospital pharmacist would be relegated to the status of mere merchant. Or worse. Even the man in the marketplace has full knowledge of the merchandise he sells.

It has long been the contention of our profession, and a sound one, that therapeutic agents must not be handled like merchandise or by the untrained layman. State governments have recognized this basic public health requirement. They have restricted the compounding and dispensing of prescription drugs to the licensed pharmacist—the specialist in regard to properties, actions and preparation of therapeutic agents.

This responsibility of the pharmacist involves something more than receiving drugs at the back door of the pharmacy and sending them out the front door on a physician's prescription or verbal order. How will the pharmacist fill his role in modern medical care? In addition to his dispensing and compounding skill, he should be able to evaluate the multiplicity of drugs becoming available and, as Dr. Elman points out, insist on scientific standards. In one instance it may be amino acid mixtures; in another, penicillin products.

The pharmacist should be ever ready to discuss with the physician the nuances between various drugs available.

For this task we need more information rather than less. We do not question the good intentions or standards of a firm—such as Mead Johnson and Co. in the instance of the amino acid inquiry—which refuses to supply the pharmacist with professional information concerning products. We do submit that such a policy is based on a false precept and does not encourage more scientific medical care.

We do not wish to encourage self medication, nor is this issue involved. Should an unethical pharmacist wish to counter-prescribe he will do so, with or without scientific data on the product. Indeed the entire development of pharmacy as a profession indicates that the more the pharmacist is educated to understand the exact nature and rationale of medications and their limitations, the less likely he is to encroach upon the specialized field of the physician.

The fully informed pharmacist has been increasingly helpful to the medical profession as a source of information regarding the increasingly complex field of pharmacy. This is particularly true at a time when rapid advances in diagnostic techniques and therapy provide a full-time medical job without the physician also trying to be a pharmacist.

The pharmaceutical manufacturer will be wise who recognizes this important service of the practicing pharmacist. An excellent example of awareness to today's trends is expressed in recent advertising of Abbott Laboratories:

"No busy physician can hope to gain, much less retain, a precise knowledge of the properties of each important new pharmaceutical specialty. He stands in need of a competent, informed, unbiased counselor. Why shouldn't he, then, turn to the pharmacist whose training and background equip him for this professional service? This is the new field of pharmacy. . . ."

It comes down to this: Today's pharmacist must be more than a purveyor of drugs—if there is to be an important place for pharmacy tomorrow. Pharmacists should receive and also seek full professional information on proprietary products which cannot always be individually discussed and evaluated in reference books or journals. Manufacturers should be ready to supply such information to all legitimate professional inquiries. Retail and hospital pharmacists should object, individually and through their organizations, to any attempt wherever it may arise to restrict dissemination of scientific data.

GOVERNMENT PHARMACISTS DISBAND ASSOCIATION TO STRENGTHEN UNIFIED ACTION BY PROFESSION

Sirs:

The American Association of Government Pharmacists after much thought, study and deliberation decided to dissolve its membership.

Notice is hereby given to all concerned that due to duplication of effort, and to avoid conflict with other national and state pharmaceutical organizations, and not to create an impression that organized pharmacy is divided, he officers, committeemen and majority of members of the American Association of Government Pharmacists have decided to dissolve the organization at the earliest possible moment.

In taking such action the American Association of Government Pharmacists urgently requests each and every member to affiliate with or keep his or her dues paid with the AMERICAN PHARMACEUTICAL ASSOCIATION and the American Society of Hospital Pharmacists.

The above decision was arrived at after much correspondence and deliberation among the members of said association and it seems to be the opinion of most of the officers, committeemen and members that there is absolutely no need for a separate organization of government pharmacists due to the effort put forth by the AMERICAN PHARMACEUTICAL ASSOCIATION since Dr. Robert P. Fischelis has been acting as secretary of our parent organization of pharmacy.

H. C. PAINTER
President

ALBERT H. MOORE
Secretary

A. PH. A. "HELPED TREMENDOUSLY"

Sirs:

I have just received my 1946 membership card and certificate. I believe that by joining the ASSOCIATION, it has helped me tremendously in keeping up with the latest in pharmacy.

I was recently discharged from the service and am now employed as a civilian pharmacist at the port dispensary here. . . .

Fort Mason, Calif.

CLEMENT L. LEW

PHARMACISTS IN THE CANAL ZONE

Sirs:

This letter is to acknowledge receipt of information on the Civil Service status of pharmacy. Canal Zone pharmacists are not regular Civil Service employees but our salaries and qualifications are supposed to follow Civil Service regulations as closely as possible. We had noticed and discussed the low qualifications required of pharmacists in Govern-

ment service in the States and are pleased to hear that some action is being taken. I was quite impressed with your letter of November 30, 1945, to Mr. Harry B. Mitchell and will see that other members of the Canal Zone branch of the AMERICAN PHARMACEUTICAL ASSOCIATION receive an opportunity to read it.

We have been having very good attendance at our meetings this year. Except for one of our members who was on leave in the States, there was 100% attendance at our last meeting. Since we are scattered over a 50-mile territory we are quite proud of the attendance record.

Cristobal, Canal Zone

THOMAS E. CADY

COMMENT FROM 37-YEAR MEMBERS

Sirs:

Your letter notifying me of Life Membership [because of 37 years of continuous membership] marked a significant milestone in my career as a pharmacist, which began over a half century ago. The A. PH. A., as the guide and driving force of our profession, has marked many a great milestone of its own. I am therefore proud to say that for the past thirty-seven years I have taken part in an organized movement to promote the recognition of the importance of pharmacy to national welfare.

The struggle of the independent pharmacist for a place in the sun has been a long one. The banding together of these pharmacists by the A. PH. A. and state associations has provided a united front which every day brings us nearer to our goal. . . .

Los Angeles, Calif.

ORAZIO TOCCO

Sirs:

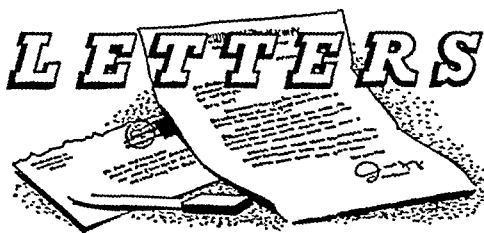
Thank you very much for the card entitling me to life membership in the AMERICAN PHARMACEUTICAL ASSOCIATION. It comes as a complete and pleasant surprise. It is hard for me to realize that I have been a member of the ASSOCIATION for thirty-seven years.

Your kind letter recalled old memories of pleasant hours with Remington and many, many more of the old guard. . . .


I have been and still am a member of a number of associations and scientific societies, but somehow I always liked the AMERICAN PHARMACEUTICAL ASSOCIATION the best. There is a friendly atmosphere which warms the heart and makes one realize at once that the AMERICAN PHARMACEUTICAL ASSOCIATION has a lot to offer.

Chicago, Illinois

FREDERIC FENGER



STRAIGHT FROM HEADQUARTERS



by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

WHAT does the average pharmacist know about the potentialities of his professional services to the community which he serves? According to views expressed by some members of the wholesale drug and manufacturing industry, the answer is: "Precious little." Perhaps they are right. If so, it is high time for the individual pharmacist to carry on a bit of research in his own behalf.

Some years ago pharmaceutical manufacturers and wholesale druggists were ignorant about a lot of things to which they are now alert and about which they have ascertained the facts. Experience enables men to make good guesses and to generalize on business and professional matters. But those who substitute research for guess work and rule of thumb have learned that many things they have known and were very dogmatic about just are not in accordance with the facts as revealed by systematic investigation.

No pharmacist can know accurately how much of certain drugs and chemicals his clientele actually requires over a period of a year unless he keeps purchase records. Few pharmacists are aware of the potential requirements of their communities with respect to health supplies because only a few have taken the trouble to apply available census figures to their own localities. Today it is important for pharmacists practicing in their own establishments and furnishing their own facilities to know how many families are their potential clients, the number of members in these families, the age distribution, the type of employment in which they are engaged, their earning capacity, the extent of their education and interest in community health, the extent of their civic-mindedness and how they spend their leisure.

Next to accumulating such facts oneself—which incidentally is good continuing education for any pharmacist—the best procedure is to use such facts as are made available by those who specialize in such research. Various organizations of economists, some organizations dealing with

public relations, a number of drug manufacturers, wholesalers, and statistical organizations are now assembling such data and making it available to those engaged in retail distribution.

Pharmacists will do well to acquire the data produced by these organizations but interpretation of these data in terms of local communities is a matter for the individual pharmacy owner. Blanket statements and conclusions drawn for the United States as a whole may not apply to specific localities. There is still no good substitute for your own thinking.

Veterans' Affairs

At the time this is written a very intemperate attack has been made by the Commander of the American Legion on the Veterans' Administration, and particularly on Gen. Omar N. Bradley, its director. Our observation and fairly close contacts with the pharmaceutical aspects of the reorganization program of the Department of Medicine and Surgery of the Veterans' Administration indicate that Gen. Hawley, its chief medical officer, has had the unqualified backing of Gen. Bradley, and both have in mind only the highest quality of service, which includes pharmaceutical service. An excellent start was made in this direction when graduation from an approved four-year course in pharmacy became the minimum legal prerequisite for admission to positions as pharmacists in the Veterans' Administration. Furthermore, Gen. Bradley has cordially received representatives of the pharmaceutical profession and has accepted their offer of co-operation and support through the appointment of state committees of pharmacists who are expected to guide the placement of pharmacy veterans in satisfactory positions and in the purchase of pharmacies as well as in the proper utilization of educational facilities under the GI Bill of Rights.

To us the attack on Gen. Bradley and his Administration, after only six months of opportunity to bring order out of the chaos existing

when he took over the reins seems to be entirely out of order, especially in view of the terrific influx of new activity resulting from the rapid discharge of millions of soldiers.

The appointment of a highly competent chief pharmacist of the Veterans' Administration will assure the future development of this phase of the Administration's Department of Medicine and Surgery.

Army Pharmacy

By the time this issue of the JOURNAL appears in print decisions of considerable moment will have been made with respect to the future of pharmacy in the U. S. Army. The law creating the Pharmacy Corps unfortunately did not provide for anything more than the creation of a corps and the specification of the number of those who were to compose it. The law itself did not outline in detail the functions the corps was expected to carry on, nor did it provide for a director or other organizational factors.

This legislation became effective in the middle of 1943 when we were at war, when medical services of various kinds had been organized and channeled without reference to the establishment of a Pharmacy Corps. Accordingly, it was not difficult for the Medical Department of the Army to sidetrack effective organization and integration of this Corps and also to avoid the organization of a reserve which was authorized but not made compulsory.

Now that the war is over and Congress has authorized an increase in the number of commissioned officers in the Regular Army up to 25,000, Pharmacy Corps commissions are being

offered to officers in the Sanitary Corps and in the Medical Administration Corps of the A. U. S. and the educational requirements for the Pharmacy Corps are being waived for these officers during the period of recruitment of regular army officers from the wartime Army of the U. S.

This is obnoxious to the pharmaceutical profession because the Pharmacy Corps was intended to be composed exclusively of pharmacists. It has been known for some time that the Surgeon General is anxious to organize all medical services other than medicine itself, dentistry, nursing and veterinary medicine, in a separate corps to be known as the Medical Service Corps. If authorized, this corps would absorb the Pharmacy Corps, and unless provisions are made for a distinctive pharmacy section in such corps headed by a chief pharmacist, pharmacy will again lose its identity as a separately functioning group within the medical department.

At this writing Congressman Durham, who sponsored the original act creating a Pharmacy Corps in the U. S. Army, and the committee of twelve representing the A. Ph. A., A. A. C. P., N. A. B. P. and N. A. R. D. are endeavoring to determine the best procedure for maintaining the gains made with the establishment of the Pharmacy Corps. The situation will be discussed with the Surgeon General of the Army, and out of it all it is expected that a more satisfactory pharmaceutical service will result in the Army regardless of the organizational setup. However, American pharmacy gained something when the legislation establishing a separate Pharmacy Corps in the Regular Army was passed, and this gain must not be sacrificed for something less desirable.

COLLEGE ENROLLMENT WILL REACH NEW HIGH

THIS spring there will be at least a quarter million veterans in colleges and universities; by fall the number will be at least 600,000, according to the American Council on Education. Total enrollment in higher educational institutions is expected to be approximately 25% above the peak prewar year. Colleges of pharmacy are sharing in this sudden influx of students and its attendant problems.

One of the most serious problems has been the lack of housing for students, and particularly students with families. Plans for construction of laboratories or classrooms should be postponed

except in unusual cases, the Council on Education suggests, so that scarce building materials can be used for housing.

Laboratories and classrooms should be used continuously for twelve or sixteen hours a day, the Council's bulletin states. Some institutions may arrange to use facilities of secondary schools when not in use by high-school students.

In connection with student enrollment, colleges are urged to keep a balance between their continuing student body graduating from high schools and the veterans so that neither will be served at the expense of the other.

ENZYME THEORY OF DRUG ACTION

by MELVIN W. GREEN

AMERICAN PHARMACEUTICAL ASSOCIATION LABORATORY

AS MORE specific drugs became a part of the armamentarium of physicians it was natural that pharmacologists should attempt to explain the mechanism of drug action. Many theories have been developed, among the most noteworthy being the relationship between lipid solubility and activity, the possibility of an interaction between the drug and "active patches" on the cell, the relationship between the ability of the drug to penetrate into the cell and its activity, and the ability of the drug to interfere with enzyme controlled metabolic processes and thus affect cellular metabolism. In many cases this latter mechanism has been well established and new modifications of the enzyme theory are being brought to light constantly.

Some pharmacists may believe this conception is too nebulous and theoretical to be of practical significance. But it must be remembered that it was the theoretical concept of Ehrlich that the azo dyes are supposedly highly antiseptic that led to the highly important discovery of the sulfonamides.

Most of the present interest in the enzyme theory of drug action dates from the discovery of Loewi in 1921 that stimulation of a parasympathetic nerve results in the liberation of acetylcholine which, when it comes in contact with the cells, produces the characteristic physiological response. It had been known for some time that physostigmine was parasympathomimetic[†] in nature, and shortly after Loewi's discovery it was demonstrated that this action is in reality due to an inhibition of cholinesterase, the enzyme responsible for the physiological hydrolysis of acetylcholine.

Since acetylcholine is an extremely active substance it is obvious that a more or less constant liberation of acetylcholine in the tissues would dam up until poisoning occurs. Nature has taken care of this contingency through the enzyme cholinesterase, which catalyzes the hydrolysis of acetylcholine into choline and acetic acid. Acetic acid in the concentrations produced is inert and choline possesses only about one-thousandth of the physiological activity of

DRUGS MAY ACT BY INTERFERING WITH ENZYME CONTROLLED LIFE PROCESSES, NEW CONCEPT OPENS PROMISING AVENUE OF RESEARCH

acetylcholine. For a more complete discussion of the mode of action of parasympathetic drugs, the reader is referred to THIS JOURNAL, 5: 286 (November), 1944.

It has been demonstrated also that drugs not administered specifically for their parasympathetic effects often elicit side-actions through such an enzyme mediation. For example, the Bernheims, Wright, and others have shown that morphine inhibits cholinesterase, a factor that probably accounts for the cardiac slowing and the respiratory depression of morphine. In fact it is not altogether unlikely that this enzyme inhibition may be responsible for the central stimulation.

For some time it has been known that when sympathetic nerves are stimulated, sympathin, a substance many people believe to be either epinephrine or a structural analogue, is liberated and affects the receptors in a manner analogous to acetylcholine. There is considerable evidence to show that cocaine, ephedrine, and certain sympathomimetic agents act by the inhibition of the enzymes destroying the sympathin and/or epinephrine. The pharmacological action of the sympathomimetic amines was most recently reviewed at the American Chemical Society Symposium in 1944 [*Ind. Eng. Chem., News Ed.*, 37: 116, 1945].

The spectacular advent of the sulfonamides caused considerable search for an enzymic mechanism to explain their action. Early attempts to tie the action of the sulfonamides to certain enzyme systems were more or less abortive until the finding of Woods that the action of these drugs could be inhibited by para-amino benzoic acid (PABA). This soon brought to light the activity of PABA as an important link in metabolic function within animal tissues as well as bacteria. This finding seems to carry with it the idea that the sulfonamides can compete with PABA for certain vital centers in an enzyme in

Adapted from a paper published in the *Scientific Edition* of THIS JOURNAL, 35: 1, 1946.

[†] Parasympathomimetic action is one resembling a stimulation of parasympathetic nerves.

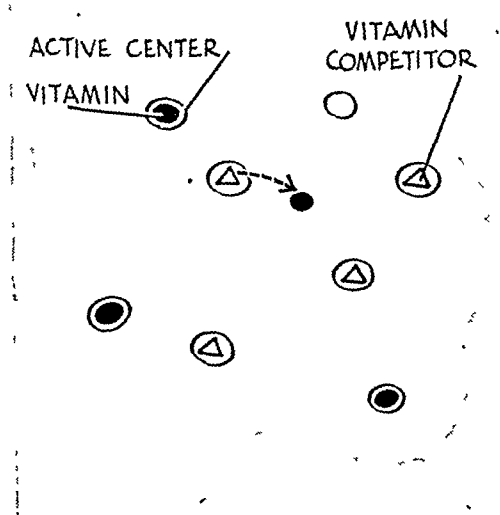
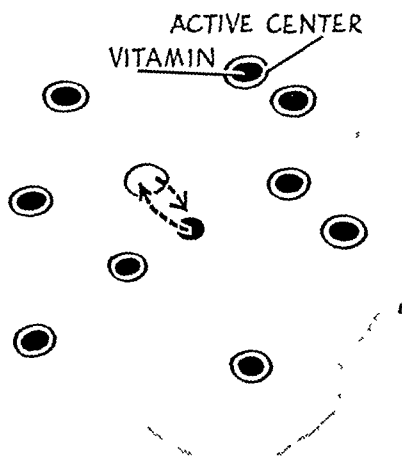
bacteria (possibly in other animal tissues too) and, indeed, may be the successful competitor. This competition is due to the structural similarity of the two compounds. But the similarity in action seems to end once the drug has successfully kept the PABA away from the enzyme center, for the sulfonamide is not capable of replacing the PABA in the metabolic events in which the latter participates. This may be considered analogous to a key which fits into a keyhole but cannot unlock the door.

In an analogous manner, McIlwain found that pyridine-3-sulfonic acid could compete with nicotinic acid. Thus the stage was set for the possible production of vitamin deficiency in higher animals by the feeding of structural analogues of the vitamins.

In considering the action of vitamins, it must be remembered that most vitamins (particularly members of the B complex) are known to play a well-characterized role in cellular respiration. Several of these vitamins join with other compounds such as adenine, ribose and phosphate to form a coenzyme which in turn is attached to a specific protein to form an active biological catalyst. The vitamin portion of this giant molecule can undergo reversible oxidation and reduction by the gain and loss of hydrogen atoms. Thus it serves as a sort of "bucket brigade" to carry hydrogen atoms from one metabolite to another until ultimately the hydrogen is oxidized to water.

In several cases, outlined here, a chemical agent very similar to a given vitamin in structure is fed to experimental animals. The vitamin analogue is capable of going into the cell at the same point the vitamin enters, as shown in the diagrams below, but it is not capable of taking the place of the vitamin in respiration and as a consequence a deficiency results.

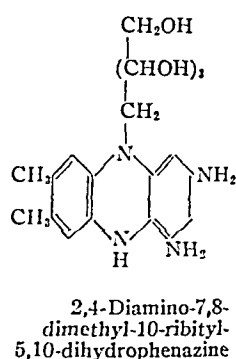
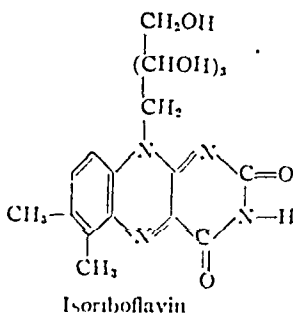
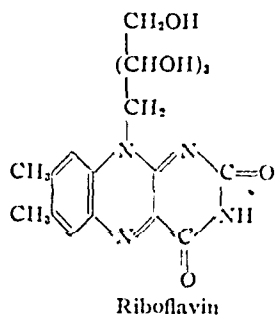
In 1943, Woolley and White produced an apparent thiamine deficiency in mice by feeding a pyridine analogue of thiamine, known as pyri-



MODE OF ACTION OF VITAMIN INHIBITORS is illustrated by the schematic diagrams. In the cell above a vitamin is in contact with active centers (enzymes), where it performs its normal function in cellular respiration and metabolism. In the cell shown at the left some of the enzyme centers are taken up by molecules similar to the vitamin. No room is left for the vitamin and, since the "vitamin inhibitor" molecule cannot function as a vitamin, a deficiency results. This same principle applies to other essential metabolites.

thiamine. It was shown that 40 molecules of pyriothiamine nullified the action of 1 molecule of thiamine.

It has also been shown that the feeding of isoriboflavin can produce a riboflavin deficiency. Woolley found that 2,4-diamino-7,8-dimethyl-10-ribityl-5,10-dihydrophenazine could compete with riboflavin in certain microorganisms. The formulas, below, show the similarity of these compounds in structure.



In 1938, Woolley and co-workers showed that 3-acetylpyridine promptly killed dogs which were nicotinic-acid deficient but had no effect on normal dogs. Mice do not ordinarily respond to nicotinic acid deficiency, yet Woolley found that 3-acetylpyridine produced signs of such deficiency when fed to mice, and these symptoms were prevented by either nicotinic acid or nicotinamide.

In 1943, Woolley and Krampitz showed that glucoascorbic acid, closely related to ascorbic acid (vitamin C), when added at the 5% to 10% level to the diets of mice, could produce scurvy in mice, animals which are not capable of becoming scorbutic on diets totally devoid of vitamin C.

In 1945, Dr. Woolley showed that α -tocopherol quinone has biological properties linked both to vitamin E and to vitamin K. The typical sign of vitamin E (tocopherol) deficiency is the death and resorption of the fetus (rats and mice) during the latter part of the period of gestation. Only a prolonged deficiency can produce muscular dystrophy and death. Woolley found that the administration of 100 mg. of α -tocopherol quinone, a compound closely related to vitamin E, brought about resorption of the fetus and hemorrhage, while comparable doses produced no effect in nonpregnant animals. No muscular dystrophy occurred and no permanent damage was done to the reproductive system.

In an attempt to find the cause of sweet clover disease in cattle, Link and co-workers found that

dicoumarol [3,3'-methylene-bis-(4-hydroxycoumarin)], which could be isolated to the extent of about 60 mg. per Kg. of spoiled clover hay, was the active agent. Of particular interest here is the finding of Link that the feeding of vitamin K could overcome the anticoagulant properties of dicoumarol. Link found that any great change in the structure of dicoumarol brought about a marked change or even loss of activity, but significantly all compounds which were active could,

at least theoretically, be degraded into salicylic acid. When salicylic acid itself was fed to rats on a diet low in vitamin K, Link found a hypoprothrombinemia similar to that produced by dicoumarol. It is significant that salicylates do not appear to affect the prothrombin activity of rabbits and dogs, species which are resistant to avitaminosis-K. Rapoport, Wing, and Guest showed that aspirin lowers the prothrombin content of human blood. To further cement this vitamin K-salicylate antagonism is the interesting observation that quinones capable of exhibiting vitamin K activity can be degraded to phthallic acid. Furthermore, after feeding 2-methyl-1,4-naphthoquinone (vitamin K₃) to a dog, phthallic acid was recovered from the urine. When one considers the structural similarity of phthallic acid to salicylic acid, it is not difficult to believe that salicylates (and dicoumarol) can cause hemorrhage from hypoprothrombinemia by competing with phthallic acid, formed during metabolisms of vitamin K, for some enzyme center.

These examples, and there are others recorded in the literature, serve to show that there exists a positive concept of deficiency disease (i.e. successful competition of an "inactive" substance with the essential nutrient for a place in the enzyme centers) as well as the historically negative concept (i.e., absence of the essential nutrient).

Researches such as these just discussed serve to point up the fact that profound metabolic

changes can be brought about by enzyme inhibitors and structural analogues of the essential metabolites. No doubt the number of such inhibitors is very large. It would be of interest to examine some of the more subtle effects of some of these substances.

While the production of a vitamin deficiency by positive means is dramatic, the production of a partial and localized deficiency might be of more practical application. The B vitamins, especially, have been linked closely with cellular respiration for well over a decade. The inhibitors of these vitamins, if fed at a lower dosage, might possibly bring about a localized vitamin deficiency, causing hyperactive tissues to operate at a lower energy level. If successfully worked out this could be very useful clinically in the treatment of certain diseases of the central nervous system.

Possible Use in Chemotherapy

Another possibility of the extension of this theory is in the field of chemotherapy. Knowing that certain drugs affect specific points in cellular metabolism, organic chemists no doubt will study systematically the effect of certain groups on these specific metabolic centers. It is known, for example, that certain cellular groups containing an —SH linkage, are highly vulnerable. A study of compounds which can react with an —SH group may disclose valuable therapeutic agents.

A precedent for such possibilities exists in pharmacology. There are many examples of series of drugs in which small chemical changes sufficiently alter such physical properties as solubility in water or lipoids, surface tension, diffusibility, polarity, dissociability, etc., so that a considerable measure of tissues and organ specificity exists. The sympathomimetic amines are good examples. The administration of these drugs simulates stimulation of the sympathetic nervous system, i.e., elevation of blood pressure, relaxation of bronchii, inhibition of gastrointestinal motility, and mydriasis. Yet certain of these amines can cause bronchial relaxation with a limited pressor activity; thus, at a given dose level, a measurable degree of tissue specificity exists. In this same manner, no doubt, a study of a series of vitamin inhibitors and essential metabolite inhibitors may disclose compounds of clinical value for their specificity in influencing metabolism both in human tissues and the bacterial cell. Certainly such recent work points out clearly the need for a more thorough study of

the effect of drugs, both old and new, on enzyme-mediated metabolic processes.

For the reader who is interested in reviewing this theory in greater detail, he is referred to recent reviews by Welch [*Physiol. Rev.*, 25: 687, 1945] and by Woolley [*Science*, 100: 579, 1944].

—R—

MONTANA BOARD TAKES CENSUS OF PHARMACEUTICAL PERSONNEL

Pharmacists in Montana, on the average, work 59.3 hours per week for a salary of \$54.78, a census by the Montana State Board of Pharmacy reveals. The average retail pharmacy is open 72.5 hours per week.

Pharmacists who are college graduates outnumber nongraduates nearly 3 to 1 (487 compared with 171). Approximately 1 pharmacist out of 9 is a woman.

Pharmacists employed in various types of work were tabulated as follows:

Independent pharmacies	298
Chain drugstores	14
Hospital pharmacies	11
Salesmen	20
Laboratory technicians	2
Educators	2
Government service	6
Nonpharmaceutical work	45
Owner or partner	244
Managers	26
Clerks	129

The Montana census showed that 74 positions for pharmacists were available in the state. Data also revealed the composition of pharmaceutical personnel by age groups, type of registration and other factors.

RETAIL PHARMACY PURCHASED FOR OPERATIONAL EXPERIMENTS

A typical neighborhood pharmacy has been purchased for experimental purposes by Fair Trade Merchandising, a New York point-of-sale promotional organization. The pharmacy will be used to develop and test window and interior displays, acceptability of new products, departmentalization plans and to make studies on such problems as operational costs. Findings will be made available to retail pharmacists and manufacturers participating in the program.

CHEMICAL ABUSE OF THE HUMAN FOOT

"THE human foot has become the target of unbelievable chemical abuse," according to an article in the *Journal of the American Medical Association* (130: 249, 1946).

Four investigators—G. B. Underwood, M.D.; L. Edward Gaul, M.D.; Eileen Collins and Mabel Mosby, all of Evansville, Ind.—state that patients' feet today are "painted all the colors of the rainbow" or daubed thick with salves, powders and ointments.

The *Journal* article says that "the patients, when questioned about the number of remedies used, shrug their shoulders and exclaim 'I couldn't begin to recall. I've used everything. You are the sixth or seventh doctor I've seen. I've had this stuff between my toes for years. Just when I think it is well, it's back again. Each time it comes back I try something else. I've spent a small fortune for remedies, and look at my poor feet.'"

The authors say there is a preponderance of advertising urging patients to apply various remedies for inflammation of the feet, especially for "athlete's foot" which is caused by fungi. "Every channel of advertising implores the sufferers: to put your fungus to sleep; to stop fierce, torturing maddening itch; to relieve and quiet the burning; to sooth stinging; to heal ugly cracks and to allay suffering and pain."

The investigators report that they had studied the cases of 400 patients who had applied an assortment of remedies before their first visit to a physician. The average number of preparations used was four, but if the dermatitis or foot inflammation was recurrent the number would exceed 10 or sometimes 20.

"In this series," the authors say, "40% of the patients (160) showed positive reactions to one or more of the remedies used. . . . As the number of remedies applied increased, so did the incidence of positive reactions. Any patient who shopped long enough would sooner or later apply a salve, tincture, lotion or powder that would contain an irritant or sensitizer."

In 56 of the 160 patients the irritation was due to one of the organic mercurials. Merthiolate and phenol caused some reactions. In 69 cases, or 43%, tars and derivatives were the offenders.

The investigators suggest that all preparations containing mercury designed for skin application carry a "warning" on the label of the presence of a sensitizing agent. "The normal skin is apparently well equipped to withstand mercury contacts," the article says, but adds: "An injured

skin or skin shorn of its protective layers, particularly a skin already inflamed by contactants, is favorable for mercury to induce sensitization."

The four writers point to the many preparations advertised in both medical and lay publications. All of the preparations are chemically different but each a specific for foot troubles.

"Pamphlets arrive also with quotations from eminent medical authorities who found this a specific or that a specific 'to eliminate fungous infection ringworms without irritation.' Furthermore, and herein lies the tragedy, it has spread into the American home. The daily, weekly and monthly periodicals display an urgent message how to diagnose, prevent and treat athlete's foot.

"Several decades ago the bowel was being symptomatically dosed. Each abdominal complaint had myriads of potions and concoctions all of which, if given a trial, would effect curative miracles. The bowel has had its therapeutic renaisance, but the skin, its symptoms and even its signs of disease are being symptomatically daubed and painted. A chemical and pharmacologic exposure of the oral cure-alls caused their mysterious and divinatory healing powers to vanish. Many were worthless, others actually or potentially dangerous. When the cutaneous oils, creams, salves, lotions, tinctures and powders are chemically and pharmacologically exposed, many of them will prove worthless. Many are already actually and potentially dangerous. It took the tragedies from self-medication to end oral dosing; tragedies from self-treatment of skin diseases are mounting."

The article urges the Council on Pharmacy and Chemistry of the American Medical Association to "'clean house' in the field of cutaneous drugs as it did with oral and parenteral drugs: tear apart the concoctions and define each cutaneous chemical in terms of dosage, indications and contraindications, and declare each therapeutic agent according to its chemical and pharmacologic properties."

—R—

MASSACHUSETTS VETERANS SERVICE

The Massachusetts College of Pharmacy's placement bureau has joined those providing employment aid to veterans by establishing a Veterans Service. Employers of pharmacists have been sent a questionnaire concerning the types of positions available and the qualifications required to fill them.

Motion Sickness

HYOSCINE BEST PREVENTIVE OF
TRAVEL ILLS NOW KNOWN BUT
ITS EFFECTIVENESS IS LIMITED

WARTIME research and experience in the prevention of motion sickness is stimulating renewed interest in this peculiar illness on the part of civilian physicians and pharmacists.

Although no dramatically effective preventive agent has emerged from recent experiments, it has been established that alkaloids of the belladonna group, and more especially hyoscine (scopolamine), are the best preventives now known. Many previously proposed theories and preventive measures for motion or travel sickness could not be substantiated; others were discarded as unsound.

Hyoscine alone, or in combination with atropine and/or a barbiturate, has been used to a limited extent by both the U. S. Army and Navy and by England and Canada. Under the auspices of the Office of Scientific Research and Development, tests of the efficacy of a number of agents have been carried out on approximately 14,000 troops during amphibious training operations. Each agent was tested against a placebo. Medication proved helpful under such noncombat conditions in reducing the incidence of motion sickness in trainees not yet habituated to air or ocean travel.

Motion sickness remedies undoubtedly will be prescribed more frequently as a result of wartime experience and of increased civilian travel of all types.

The prolonged motion of a plane, ship, car or train produces in susceptible passengers a familiar symptomatology: drowsiness, nausea, pallor, cold sweating and vomiting. There is wide variation in susceptibility among individuals and in susceptibility of the individual to different kinds of travel motion.

The physiology involved has not been clearly defined, since most experiments have been on an empirical basis. It is established that motion sickness primarily originates in the inner ear or vestibule. Structures of the inner ear give rise to

nerve impulses concerned with equilibrations. The motion of travel results in exaggerated and unusual stimulation of this mechanism.

It has been demonstrated in dogs that removal of the labyrinth or removal of the vestibular portion of the cerebellum reduces the incidence of motion sickness. It has also been pointed out as possibly significant that nausea and vomiting accompany labyrinthine diseases.

In addition to the physical stimuli of motion, psychological and environmental factors are contributory. For example, unpleasant sights and smells tend to precipitate an attack of motion sickness.

Following an initial severe attack of airsickness or seasickness it has been observed that merely boarding a plane or ship again may produce nausea in some persons. This conditioned reflex often can be overcome by the temporary use of hyoscine until the individual has become habituated to motion. After several uneventful trips many persons no longer need rely on the aid of drugs.

It is commonly observed that most persons who become ill during initial travel experiences by plane or ship eventually become habituated to the motion and experience no unpleasant results.

Comdr. E. C. Hoff, (MC) U. S. N. R. of the Bureau of Medicine and Surgery, Navy Department, emphasizes that motion sickness remedies should not be resorted to habitually or routinely. Persons susceptible to motion sickness who must travel regularly should either become habituated to motion or obtain employment that does not require extensive traveling. The legitimate use of preventive agents lies in facilitating habituation to travel motion or in aiding the person who travels only occasionally.

Over the years, many drugs have been suggested for trial or use as motion sickness preventives. Those for which various investigators

could demonstrate no significant specific action in recent experiments are: ephedrine, amphetamine, thiamine, pyridoxine, chlorobutanol, pavatrine, prostigmine and certain barbiturates. Because of the difficulty of establishing scientific controls in tests of this sort, there is some difference of opinion concerning the relative effectiveness of various agents. It should be particularly mentioned that under certain conditions sedatives, such as the barbiturates, may be helpful.

Of many drugs tested, the related alkaloids hyoscine (scopolamine), hyoscyamine and atropine are generally considered most effective, although by no means universally reliable.

In controlled trials aboard ship, conducted on behalf of the British Medical Research Council [*Lancet*, Jan. 22, 1914, p. 127], hyoscine was judged to be most satisfactory of 13 drugs tested. By comparison with control groups, it was estimated that hyoscine, 0.6 mg., protected 50% to 75% of susceptible persons. Atropine and *l*-hyoscyamine appeared to be somewhat less effective but the difference was not considered significant statistically.

Other British workers [*Brit. Med. J.*, July 7, 1945, p. 6] conducted similar tests under tropical conditions and reported that hyoscine, 0.6 mg., protected about 70% of susceptible persons and was the best of the drugs tested.

A report on a controlled experiment in U. S. Naval aviation personnel [*J. Aviation Med.*, 16: 59, 1945] indicated that hyoscine hydrobromide, 0.6 mg., will prevent airsickness in a majority of susceptible persons. The incidence in 531 controls was 7.5%; the incidence in 200 airmen receiving hyoscine was 0.5%.

Experience by the armed forces confirms that the drug of choice is hyoscine, to which preventive effects have long been ascribed.

Hyoscine

Although hyoscine is the term used almost universally in the clinical and commercial literature, pharmacists should bear in mind that hyoscine is a synonym of and identical with scopolamine. The Pharmacopœial product is the hydrobromide of laevorotatory scopolamine obtained from plants of the Solanaceae. Tablets of scopolamine hydrobromide are official in the National Formulary.

The U. S. P. dosage is 0.5 mg. Slightly higher dosage, 0.6 mg. or 0.7 mg., is usually administered orally one-half to one hour before starting a trip. No unanimity of opinion exists regarding the duration of effect but it is apparently only a

few hours. The dose should not be repeated except as advised by a physician.

Hyoscine must be dispensed only on prescription. The U. S. P. monograph carries the warning statement "Caution: Scopolamine Hydrobromide is extremely poisonous." Sollmann states that there are great individual variations in the response to scopolamine and, therefore, in its toxicity. The recommended dose lies much below the ordinary fatal dose but small doses (less than 0.75 mg.) have on occasion produced serious poisoning.

Recently published results of trials [*Lancet*, Jan. 22, 1944, p. 127 and *Brit. M. J.*, July 7, 1945, p. 6] and the experience of the U. S. Navy indicate that the side-effects of hyoscine in proper dosage do not constitute an important problem. Holling and his co-workers expressed the opinion that the drug in proper dosage is unlikely to have deleterious effects in normal individuals. In a dosage of 0.6 mg. mouth dryness was only just detectable and there was no effect on physical performance or near vision, according to Holling, *et al.*

Caution Required

However, the danger of overdosage and idiosyncrasies must be borne in mind. Physicians will no doubt be particularly hesitant to prescribe hyoscine for pilots or automobile drivers, since the sedative effect on the brain might produce drowsiness. Atropine differs in this respect, having a stimulating effect on the brain, but is said to have more pronounced side-effects of other types.

Hyoscine may be combined with atropine, hyoscyamine or barbiturates in motion sickness remedies. Such products are now on the market but there seems to be no evidence that their effectiveness is any greater than hyoscine (scopolamine) alone.

Hyoscine itself is effective, however, only in a certain percentage of cases. Results are inconsistent but a significant number of susceptible persons are protected, apparently not more than 50% to 70%.

The pharmacologic rationale of the use of hyoscine is based on anticholinergic activity and its central sedative effects. What the actual mode of action in motion sickness may be is not definitely known. Additional information is needed concerning the physiology and pharmacology of motion sickness and its prevention. Such data would be useful in developing a more reliable and specific preventive agent than any now available.

PROGRESS IN VITAMIN THERAPY*

by GEORGE R. COWGILL

YALE UNIVERSITY NUTRITION LABORATORY

IT IS natural that we should usually find most interesting those developments which pertain to a new vitamin or hitherto unappreciated dietary essential. The history of our subject shows that each claim of discovery of a new vitamin has been the signal for immediate and intense research activity concerning it in many quarters. Such research has soon cleared the air, so to speak, marked out the general boundaries of the new field to be cultivated, and indicated what seemed to be the more profitable special lines of investigation to pursue further.

The current illustration of this situation is doubtless "folic acid," a factor present in the plant leaf—whence the name¹—and found first of all to be essential for the growth of the micro-organisms *Lactobacillus casei* and *Streptococcus faecalis* R. This interesting substance, for a long time known merely as something present in various vitamin extracts and concentrates, was finally isolated from liver and then synthesized by the organic chemist.²

The significance of this work will be more readily appreciated when it is realized that numerous investigators have observed anemia of one kind or another in different species of animals subsisting on special diets. As far back as 1932 Wills and Bilimoria,³ in India, fed monkeys on a diet similar to that used by the natives and observed in the animals the development of an anemia, leucopenia and granulocytopenia; these symptoms were relieved by feeding a yeast extract. In this country in 1935, Day and associates⁴ reported the production of leucopenia and anemia in young monkeys fed an artificial diet similar to one found useful for producing cataracts in rats; when the diet was supplemented with dried brewers' yeast, however, the deficiency syndrome was prevented and the monkeys exhibited good growth. Further work along this line, and negative tests with various known vitamins finally led Day and his co-workers⁵ in 1938 to believe that the condition they were studying represented lack of an unknown factor for which they suggested as a provisional designation the name *vitamin M*.⁶ In 1944, Hutchings and associates⁷ reported the isolation in

crystalline form of what they called "a new *Lactobacillus casei* factor." This was supplied to Day and co-workers with the result that, in January, 1945, there appeared a note by these investigators carrying the informative and interesting title "The Successful Treatment of Vitamin M Deficiency in the Monkey with Highly Purified *Lactobacillus Casei* Factor."⁸

On the basis of these studies in the monkey one would naturally be tempted to assume that this isolated and finally artificially synthesized *folic acid*, is indeed important for man, but experience has shown the wisdom of demanding suitable trials of it on the human species before accepting such an idea. Some tests of this sort have now been made. During November, 1945, two reports of such tests appeared in the public print.

Drs. Darby and Jones⁹ at Vanderbilt University treated several cases of sprue with folic acid. It is well known that anemia is one feature of the clinical picture presented by cases of sprue. These sprue patients received "intramuscular injections of the newly developed synthetic vitamin which is identical with the folic acid present in liver and liver extracts. The patients showed immediate and marked improvement."

The second report, coming from Dr. Tom Spies and associates¹⁰ at the University of Cincinnati and the Nutrition Clinic in Birmingham, Alabama, is particularly interesting because it deals with four anemia situations, namely the anemia of pregnancy, nutritional macrocytic anemia, Addisonian pernicious anemia, and the macrocytic anemia of pellagra. The phenomenon of reticulocytosis occurs as part of the remission of Addisonian anemia following the administration of therapeutically effective substances. Spies and associates report that the administration of the pure synthetic folic acid is followed by reticulocytosis. It would seem, therefore, that this new vitamin can truly be called an anti-anemia factor.

Evidently we are about to witness many important developments in the field of the anemias. It is not unlikely that some of the puzzles in this field will eventually be shown to be due to various complexes of interrelated dietary and physiologic factors. The discovery that a single pure substance like folic acid plays an important key role should make it easier now to elucidate these

* Adapted from an address presented at the Midyear Meeting of the American Pharmaceutical Manufacturers' Association at New York, 1945.

puzzling interrelationships in regard to anemias.

Another significant contribution to our knowledge of the relations of vitamins to blood abnormalities is seen in the recent report by Reid, Huffman and Duncan.¹¹ These workers at the Michigan State College have studied the therapeutic effect of yeast and pyridoxine (vitamin B₆) on poikilocytosis in dairy cattle.

"The work of several investigators has suggested a relationship of nutrition to the occurrence of poikilocytosis in animals. The study reported in this paper, the authors stated, "was initiated for the purpose of investigating the relationship of antianemia mineral mixtures, yeast, pyridoxine and nicotinic acid in the alleviation of the poikilocytic condition found to be prevalent in some dairy herds and produced experimentally in young calves by feeding semi-restricted rations. The results are of additional interest because of the absence in the literature of specific data on the production of poikilocytosis in dairy cattle."

Any contribution to our knowledge of the prevention and cure of poikilocytosis should be significant, because this condition has been reported in relation to scurvy and anemia studies in guinea pigs,¹² anemia in suckling pigs¹³ in pigeons fed a vitamin B-complex deficient diet,¹⁴ in anemic calves¹⁵ and in cobalt-deficient calves.¹⁶ Furthermore, as Reid and his associates¹¹ point out, "pernicious anemia is one of the diseases constantly associated with poikilocytosis."

These investigators found that young calves on semi-restricted rations and cows with large open fistules of the rumen were the dairy animals commonly affected with poikilocytosis: "Dry brewers' yeast, live yeast, or pyridoxine were effective therapeutic agents for the treatment of this condition, whereas the ingestion of nicotinic acid, riboflavin, or a mineral mixture containing iron, copper, cobalt and manganese did not elicit any curative effects on the disease."

Note that of the single pure substances tested only pyridoxine proved to be effective.

There are other indications in the literature that pyridoxine functions in some way in relation to the blood-forming organs. A severe microcytic hypochromic anemia in dogs fed artificial diets has been successfully treated with pyridoxine after failure of iron therapy.^{17,18} A relatively low level of supply of pyridoxine is required for growth as compared with the high level needed to protect pyridoxine-deficient dogs against the development of hypochromic microcytic anemia, according to McKibbin and co-workers.¹⁹

Vilter, Schiro and Spies²⁰ used this vitamin in the treatment of three pellagrins with macro-

cytic anemia and two patients with pernicious anemia with some subjective relief and a slight reticulocytic response.

Then there should be mentioned the studies of Wintrobe and co-workers²¹ in which a severe anemia was produced in pigs by feeding a pyridoxine-deficient diet, and a rapid regeneration of blood accomplished by restoration of cells to normal size after pyridoxine had been administered. A recent contribution to this subject involving another species appeared in the November, 1945, issue of the *Journal of Nutrition*. Hegsted and Rao²² of the Harvard Laboratories have been carrying out nutritional studies with the duck. Ducklings were placed on an artificial diet lacking pyridoxine. Failure of growth is the first symptom of pyridoxine deficiency noted in these birds. A severe microcytic anemia develops which responds promptly to the administration of the vitamin. A chronic deficiency picture was also produced in older ducks. The blood picture here was characterized by a drop in hemoglobin, red cell count and hematocrit. The response to pyridoxine was exceedingly prompt; an immediate growth response was also noted.

Time does not permit a more extended discussion of this interesting topic, but it does seem pertinent to mention that the literature also contains suggestions that certain essential amino acids may be of some importance in the functioning of the blood-forming organs; and the most recent work aimed at elucidating the role of pyridoxine in metabolism, illustrated in the report by Umbreit and Gunsalus,²³ contains the suggestion that "one of the functions of the vitamin B₆ group is as the general coenzyme of amino acid decarboxylases." Perhaps further studies will reveal that both this amino acid literature and the pyridoxine literature bearing on the anemia problem are definitely related and easily explained.

A recent significant development worthy of comment here relates to the old question of the role, if any, of a corn diet in the production of pellagra. The history of the incidence of this disease strongly suggests that people who use corn as the staple cereal are in some mysterious way rendered more liable to develop pellagra. Goldberger long ago believed that canine black tongue is the analogue of human pellagra. Studies of this canine disease thus constituted an important experimental approach to solution of the pellagra problem. It was this approach that finally gave us the discovery of nicotinic acid as the so-called antipellagra factor that Goldberger was looking for. In spite of this discovery,

however, certain facts remained more or less unexplained. Milk has long been known to be a valuable food for pellagrins, yet the amount of nicotinic acid in this food turns out to be quite small. During 1945 Briggs and associates²⁴ reported observations on 2 human subjects who had previously suffered from pellagra. They were hospitalized and fed a low-corn, low-nicotinic acid diet for nine and forty-two weeks, respectively. The diet provided only about 3 mg. of nicotinic acid daily; from 10 to 18 mg. have been suggested as a daily "requirement." "Each had minimal lesions of nicotinic acid deficiency at the start, but in neither was there any significant development in the direction of pellagra." This seems remarkable, especially when pellagra did not develop in these two subjects even after exposing them to ultraviolet light.

The authors make the interesting comment that "possibly we have observed all which should have been expected on a corn poor diet. It is conceivable, of course, that something in corn might inhibit the intestinal biosynthesis of nicotinic acid."

Some light on this possibility was shed during 1945 through the work of Krehl and associates at the University of Wisconsin. In their first paper²⁵ they report interesting experiments on growing rats. By using a synthetic ration adequate with respect to all known fat and water soluble vitamins except folic acid and para-aminobenzoic, these workers were able to produce a pronounced retardation of growth in the rat merely by adding 40% yellow corn, white corn or corn grits at the expense of the entire ration. It was found that the addition of nicotinic acid at levels of 0.5 to 1 mg. per 100 Gm. of the corn-supplemented ration completely counteracts the growth-depressing action of the corn. Furthermore, the kind of carbohydrate and the level of casein were found to modify the extent of the undesirable effect of the corn; but in all cases, nevertheless, the addition of nicotinic acid resulted in stimulation of growth. The favorable effect of increasing the level of casein in the diet was duly investigated and reported on in a later communication.²⁶

It appears that a supply of either 50 mg. of 1(-)-tryptophane or 1 mg. of nicotinic acid per 100 Gm. of ration was able to counteract completely the growth retardation caused by the inclusion of 40% corn grits in a low-protein ration. The authors very properly commented that "although the efficacy of feeding either nicotinic acid or tryptophane is obvious, the mechanism of their apparent interchangeability remains obscure." They suggest that the explanation

lies, in part at least, in extensive changes which occur in the intestinal flora.

Some idea of the extent of this effect can be gained from the experiments which these investigators carried out on growing dogs²⁷. The summary of that report deserves quoting here:

"When unenriched corn grits are incorporated in a synthetic ration to the extent of 60% of the sucrose, the nicotinic acid requirement of the dog is markedly increased and good growth does not result until the nicotinic acid content of the corn grits is increased to about 5.0% (more than 5 times the unenriched level) which furnishes the dog with about 3 times as much nicotinic acid as is required for comparable or better growth on a synthetic or whole milk ration."

Such findings have some rather obvious bearing on at least two questions: (1) *the question of the enrichment of corn grits with nicotinic acid as a public health measure for combatting pellagra*; and (2) *the question as to what can be taken as an appropriate standard of nicotinic acid requirement for man—one figure for corn-eating people, another figure for wheat-eaters, and perhaps still another for certain other groups of people (?)*.

These indications of an important relationship between the vitamin nicotinic acid, and the essential amino acid tryptophane, receives further support from the work of Wintrobe and associates²⁸ with pigs. Young pigs fed a high-protein diet supplemented with thiamine, riboflavin, pyridoxine, choline and pantothenic acid, and not furnished with nicotinic acid, showed no signs of nutritional deficiency except for a slightly less satisfactory growth in certain instances. When the protein content of the diet was low (10% casein), the omission of nicotinic acid from the diet was associated with various signs of malnutrition, and only in these last-mentioned pigs was there a marked and consistent reduction in the urinary excretion of nicotinic acid derivatives. Evidently there is a close relationship between the protein intake of the pig and the animal's requirement for nicotinic acid.

How best to feed the human infant is one of the important problems in pediatrics. The advantages of breast feeding over the feeding of formulas based on cow's milk are well known, but until recently we have not had as much information as we should like concerning the vitamin contents of human milk upon which to base the desired modification of cow's milk. Extensive vitamin analyses of human milk have now been made by the Research Laboratories of the Children's Fund of Michigan,²⁹ and the data compared with those pertaining to cow's milk.

Human milk exceeds cow's milk in content of vitamins A, C, niacin, inositol and folic acid; it falls below cow's milk with respect to thiamine, riboflavin, pantothenic acid, pyridoxine and biotin. Other studies made by Dr. Macy-Hoobler and associates have yielded data on breast milk actually consumed by nursing infants. It will now be possible to know how much of each of the vitamins just mentioned really was obtained by the infants that were studied. These investigations therefore have obvious and far-reaching implications important for pediatrics, vitamin therapy, and activities of the food and pharmaceutical industry aimed at the development of new and specially fortified milks of one kind or another.

Time will permit me only to mention some other interesting developments concerning the vitamins. Physicians frequently encounter cases of vitamin deficiency that do not respond to the usual therapeutic doses found effective with most patients. The complete explanation of this phenomenon is not at hand. However, we do know now of the existence of many substances that inhibit or even destroy certain of the vitamins. It does not seem unreasonable to suggest that some substances of this type may exist in

the organism, and in certain individuals be present and active to an unusually high degree; such individuals would then find even the so-called good diet unsatisfactory for their health and would require considerably more of the given vitamin when receiving therapy than most other patients. Further research in this field should therefore be pursued because of the important implications inherent in any of the data that would be obtained.

Another phase of our topic that can only be dealt with in passing, so to speak, concerns possible interrelationships between vitamins and hormones. One example of the possibilities here must suffice. During the current year Gaebler and Ciszewski³⁰ reported interesting observations made of the diabetes that occurs in depancreatized dogs. Some very positive effects of yeast on such dogs were described; and, except for the effect on glycosuria, these could be duplicated by a mixture of 7 of the B vitamins; there was a suggestion that inositol is one of the yeast components effective against the glycosuria. It is evident that we have here another field for fruitful study of the vitamins, the cultivation of which should yield results valuable to medicine.

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A T

by the President of the United States and other governors of the states and other have served to designate this National Pharmacy Week in tribute to the service rendered the people of their druggists.

Pharmacy Week Observed U.S. Druggists

Druggists throughout the nation observe National Pharmacy Week Nov. 4-10, with a program designed to "keep the people re-minded so that when they think of pharmaceuticals, they think of the pharmacist, the pharmacist's service, and the pharmacist's life." The week appears to take on importance this year, in view of the movement of the professional association of the drug store.

Pharmaceutical promotion Druggist

EVENTION WEEK. When we have had a success aside to calling public attention to the need, such as the week we used to point out the contribution of our general welfare. This time some pharmacist has thought up National Pharmacy Week, November 4 to 10, the opportunity to say to the neighborhood druggist, "You are a pharmacist, who sells prescriptions, who sells tooth paste, and who is one of the great men of your age."

advances of science more of these men and in the science of medicine the pharmacist has played a major role throughout the years. He has been the doctor's right hand man and through his knowledge, skill and education he has contributed immeasurably to the health of the nation. It is fitting, therefore, that a time, such as the currently observed National Pharmacy Week, be set aside to do honor to our druggists.

TAKEN FOR GRANTED

You may not have noticed it, but this is National Pharmacy Week. You may not have noticed it, but this is National Pharmacy Week. You may not have noticed it, but this is National Pharmacy Week.

YOUR PHARMACIST IS VERY IMPORTANT TO YOU—HE HAS EARNED AND IS ENTITLED TO A SALUTE

THE WEEK of November 4 to 10 has been set aside as National Pharmacy Week and the occasion when the public is asked to consider the importance of the pharmacist to community health welfare.

PHARMACY WEEK IN REVIEW

1945

Issues Week Proclamation Druggists to Observe Pharmacy Week

Her Garvin, state chairwoman of the National Pharmacy Week, released the following letter from Harry S. Truman, president of the United States, to the druggists of the nation.

THE CORNER DRUG

National Pharmacy Week is Nov. 4-10, and heretofore an institution that has had a career as any business in America. Each generation has seen a change in the neighborhood drugstore, (for we never spoke of going to the pharmacist's). It has grown from a panacea for ills to a department store without yard goods. Chain pharmacies compete with almost every merchant and maybe this is handy to get roller skates, paints, shoes, kitchenware, alongside cheese on rye and aspirin tablets. The tall bottles of colored water used to denote the business to us as the cigar store's Indian, but the neon sign has its day now, maybe with a door that is opened with a magic eye. Always there is a section where prescriptions are filled and a display and atmosphere of the pharmacy of the years, the pharmacist for the ills, the pharmacist for the service to his corner.

URGES PHARMACISTS TO GUARD

Washington, Nov. 4 (AP). President Truman has asked druggists to carry

Kiwanis Marks Pharmacy Week

21 Druggists Introduced, Praised for Long And Faithful Service to Community; Veteran Early McKeesport Stores

observed National Pharmacy Week. Young including John McKee, vice. Mr. Thomas 888, Mr. Kirel, in 1889 and in 1902, Mr. profession in own store in

Pharmacist Of Nation Truman Pr

Washington, Nov. Truman, in a PM message to Dr. Geon, president of can pharmaceutical nation's pharmacist contributions to the he ed forces and the efficiency in service be ma reconstruction. "The pharm tion," Preside "have earned the American peo the aid service

Let's Give Them Credit

The service of an unspectacular and little publicized whose usefulness we take for granted, is being brought to our attention. The service of an unspectacular and little publicized whose usefulness we take for granted, is being brought to our attention.

He's Earned It...

The man behind the prescription is getting a lot of attention this week all over the United States. The man behind the prescription is getting a lot of attention this week all over the United States. The man behind the prescription is getting a lot of attention this week all over the United States.

Kiwanians Mark Pharmacy Week

Dr. Rowe of Rutgers Faculty Will Speak Wednesday

Dr. Thomas D. dean of Rutgers Faculty of Pharmacy, will speak at the Kiwanis luncheon at the State Hotel, Wednesday, November 7, at 12:30 p.m.

Observe National Pharmacy Week

Medical Head Pays Tribute to Druggists

National Pharmacy Week, which is being observed during the week of November 4, received recognition in a statement issued today by Dr. G. M. Brooks, president of the Cape May County Medical Society.

"National Pharmacy Week," Dr. Brooks, "is the occasion when all who are concerned with the health of the community recognize the importance of the pharmacist's service to the community."

LET'S GIVE THEM CREDIT

THE service of an unspectacular and little publicized group of specialists whose usefulness we take for granted, but rarely to our attention, is being brought to our attention this week.

**EXPANDED PROGRAM FOR 1946 PHARMACY WEEK ANNOUNCED
AS JUDGING OF WINDOW DISPLAY ENTRIES ENDS PAST YEAR'S
ACTIVITIES, WEBER AND JUDD AND MASSACHUSETTS COLLEGE
AGAIN TAKE TOP HONORS, PARTICIPATION CALLED BEST YET**

AS THE Pharmacy Week Committee begins work on plans for an expanded 1946 program, the past year's activities come to a close with judging of the window display contest.

The Weber and Judd Company, retail pharmacists of Rochester, Minn., and the Massachusetts College of Pharmacy took top honors in the retail and college divisions, respectively. Weber and Judd will receive the Robert J. Ruth Trophy, donated each year by the Federal Wholesale Druggists' Association. The Massachusetts College will receive the cup awarded by the AMERICAN PHARMACEUTICAL ASSOCIATION. Both winners were thus honored for the second consecutive year.

Retail pharmacists receiving certificates of merit are:

- First—Samuel F. Higger, Washington, D. C.
- Second—C. W. Schmidt, Archer Prescription Shop, Wichita, Kan.
- Third—Hoagland's Drugstore, New Brunswick, N. J.
- Fourth—Miller's Drugstore, Bay City, Mich.
- Fifth—East End Apothecary, Birmingham, Ala.
- Sixth—Roy S. Warnack, Warnack Pharmacy, Los Angeles, Calif.
- Seventh—Irl G. Burkher, Pitman-Wilson Co., Rushville, Ind.
- Eighth—Neale's Drugstore, Elkins, W. Va.

Ninth—Ralph E. Ladd, Prescription Pharmacy, Rockford, Ill.

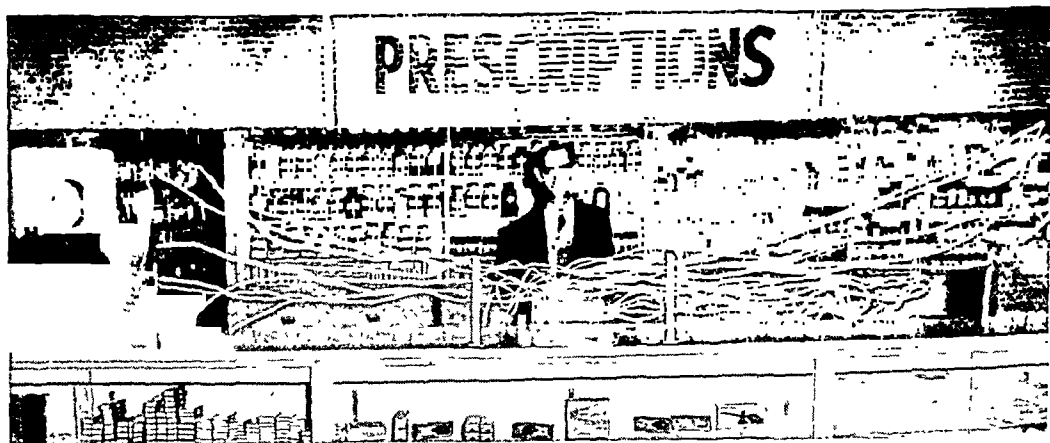
Tenth—Mrs. Milton J. DeRouen, New Orleans, La.

First honorable mention in the college competition was awarded to the Drake University College of Pharmacy, Des Moines, Ia., with second honorable mention going to the Philadelphia College of Pharmacy and Science, Philadelphia.

Those taking honors in the final judging were selected from entries from 20 states, representing winners of contests conducted at the state level. Thirteen institutions competed in the pharmacy college division, the National Pharmacy Week Chairman, Charles R. Bohrer, announced.

Window displays were judged by a special committee, appointed by the Pharmacy Week Committee, composed of George H. Frates of the National Association of Retail Druggists, Washington, D. C.; Frank L. Black of Hynson, Westcott and Dunning, Inc., Baltimore, Md.; Dr. A. C. Taylor, president of the District of Columbia Board of Pharmacy, Washington, D. C.; Bernard Zerbe, representing *American Druggist*; and Stephens Rippey, representing *Drug Topics*.

In reviewing 1945 Pharmacy Week, which was jointly supported by A. Ph. A. and N. A. R. D.,



UNUSUAL pictorial treatment of a familiar scene makes the photograph above a good example of public relations material for Pharmacy Week. Operations involved in compounding a prescription were traced by a light in the hands of the pharmacist. This photograph from the Gallagher Drug Co., Dayton, O., was given prominent newspaper position.



JUDGING THE PHARMACY WEEK DISPLAY CONTEST at A. Ph. A. headquarters on January 24 were (l. to r.) Bernard Zerbe of American Druggist; Dr. A. C. Taylor, president of the District of Columbia Board of Pharmacy; Stephens Rippey of Drug Topics; Frank L. Black of Hynson, Westcott and Dunning; and George H. Frates of the National Association of Retail Druggists. The special committee was appointed by Charles R. Bohrer, Pharmacy Week chairman.

the Pharmacy Week Committee noted increased participation through the press, radio, public addresses and, most important, through individual retail pharmacies.

Pharmacists throughout the country installed special displays, although a great many displays were not photographed for entry in the contest. Exhibits were installed in colleges, libraries and public buildings. To aid pharmacists in display work the Committee supplied 35,000 Pharmacy Week posters without charge, primarily through state associations. Forty-one state associations agreed to distribute the posters to their members.

Hundreds of newspapers carried the story of pharmacy's professional service, both in news columns and editorial pages. Releases were distributed by both the A. Ph. A. Committee on Public Relations and by state and local groups. In addition, President Truman's Pharmacy Week message to the AMERICAN PHARMACEUTICAL ASSOCIATION was distributed nationally on the wires of the Associated Press. Advertising services to newspapers supplied special copy for use by pharmacists.

A representative selection of news and editorial comment published during Pharmacy Week is reproduced on pages 115 and 122.

To publicize by radio the role of pharmacy in medical care, a suitable script had been distributed by the A. Ph. A. Committee on Radio

Publicity to all state associations and colleges and about 50 additional copies were supplied to radio stations and pharmaceutical groups just prior to Pharmacy Week. A series of radio spot announcements was also widely distributed. The A. Ph. A. president, Dr. George A. Moulton, gave two broadcasts from Washington—one directed to the nation's capital itself over an NBC station, and another over eastern U. S. stations of the Mutual Broadcasting System.

Hundreds of Pharmacy Week articles and other material for public addresses before civic and church groups were supplied from Pharmacy Week headquarters on request.

College participation was particularly effective when tied in with "open house" programs, during which pharmaceutical techniques were demonstrated and explained to the public.

Here are some of the projects highlighted in reports from various groups to the Pharmacy Week Committee:

The most comprehensive report submitted, and one which indicated an extensive and successful program, came from the *Dayton (O.) Druggists' Association*, where Nathan A. Simpson served as local Pharmacy Week chairman. Main event of the week was a program, staged in a public auditorium, which merged entertainment with material designed to give the public information about pharmacy. Radio stations

and the press both cooperated fully. Feature stories and photographs appeared in Sunday papers, and news stories and discussions by columnists appeared during the week.

In *Indiana* 124 pledges to install special displays were received by State Chairman Ira V. Rothrock. Winners of the independent and chain drugstore divisions of the state contest were awarded \$50 Victory Bonds. The Hook Drug Co. installed Pharmacy Week windows in nearly all of its 53 pharmacies. Irl G. Burkher, whose display later won seventh honorable mention in the national contest, spoke at the local high school.

The *Michigan* association received three times as many Pharmacy Week windows for judging as in 1944. The Kent County Retail Druggists' Association and Detroit Retail Druggists' Association backed state endeavors with active programs.

The *New Jersey Pharmaceutical Association* increased participation by preparing a program for the guidance of its affiliated county associations. Cooperation of the president of the state medical society and of each county medical society was secured to issue a public Pharmacy Week statement which was published in all leading daily newspapers of the state.

Twice as many display entries were received as in 1944. Camden County and Mercer County associations were particularly active, with 40% and 70% of their member pharmacies, respectively, entering displays in the contest. At least five radio programs were broadcast, and spot announcements were carried by most New Jersey stations. Pharmacy Week releases were mailed to 400 newspapers, with the *Trenton Times* receiving special mention for publishing pharmacy articles each day during Pharmacy Week and on three days the preceding week. Various local associations sponsored special newspaper advertisements. Pharmacy Week addresses were given before at least five civic clubs. David I. Cohen, chairman of the New Jersey Pharmacy Week Committee, reports that there was wider participation than ever before.

In *Alabama* daily Pharmacy Week announcements went out from 13 radio stations. Special programs were presented in every district at civic clubs and schools.

The *Northern Ohio Retail Druggists' Association* arranged three programs over local radio stations. A new twist to interprofessional publicity was given by the Northern Ohio group through a Pharmacy Week issue of *Cleveland VD Information*, a publication of the Academy of Medicine and Cleveland Health Council, which was

primarily devoted to local pharmacy cooperation in the venereal disease control program.

Kansas reported unusual Pharmacy Week activity in the field of addresses by pharmacists before civic clubs. In *Iowa* news stories in local papers were particularly successful, stimulated by model stories mailed to pharmacists from the state association. *Oklahoma* reported an especially successful radio broadcast, prepared by Prof. Ralph Bienfang with the cooperation of the Fine Arts Department of the University of Oklahoma.

In *Delaware* there was good participation through special window displays and cooperative advertising in newspapers. The *University of Toledo College of Pharmacy* and *St. John's University College of Pharmacy* reported successful "open house" events. *Nebraska* and *Mississippi* were also among those reporting good response.

Appreciation of the efforts of all those who helped make the 1945 program a success was expressed by Charles R. Bohrer, Pharmacy Week chairman. He indicated that each year pharmacists have become increasingly aware of the value of this effort in impressing upon patrons the importance of their professional services.

Those serving on the Pharmacy Week Committee with Mr. Bohrer were: R. D. Bienfang, Norman, Okla.; H. V. Darnell, Indianapolis, Ind.; L. J. Dueker, St. Louis, Mo.; L. L. Eisentraut, Des Moines, Ia.; L. J. Fischl, Oakland, Calif.; A. C. Fritz, Indianapolis, Ind.; E. W. Gibbs, Birmingham, Ala.; A. R. Granito, Hackensack, N. J.; J. W. Holt, Meridian, Miss.; E. C. Horn, Milwaukee, Wis.; John O'Brien, Omaha, Nebr.; R. Q. Richards, Fort Myer, Fla.; Walter Rhodes, Portland, Ore.; J. J. Staven, San Francisco, Calif.; and W. E. Waples, Baltimore, Md.



WINNING DISPLAYS of the 1945 Pharmacy Week contest are shown at the right. The Massachusetts College of Pharmacy won the college competition with a display (upper photograph) depicting the importance of drugs in greatly increasing man's life span since the days of ancient Egypt. The Weber and Judd Co. of Rochester, Minn., received the Robert J. Ruth Trophy as winners of the retail pharmacy division. The theme of their display (lower photograph) was "hats off to the past, coats off to the future."

How much of your day do you owe to drugs?

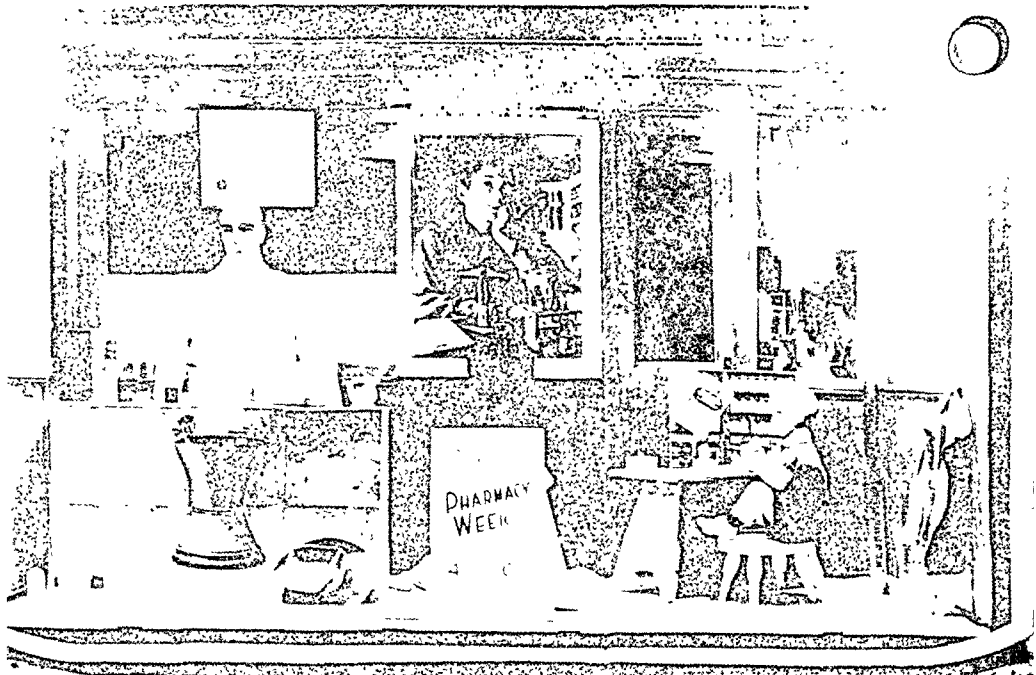
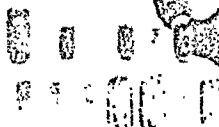
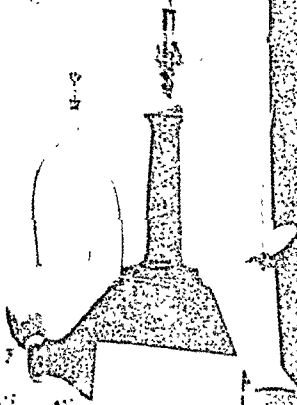
IT TOOK 3000 YEARS

to make the first medicine.

The first medicine was made from plants and animals.

Pharmacies, the way they are today, have been around for 3000 years.


Consider what thanks we owe to the pharmacist for the medicines he has made for us.



NATIONAL
PHARMACY WEEK


STEPS TO THE PROFESSION OF PHARMACY

COLLEGE OF
PHARMACY
DRAKE UNIVERSITY



FILMS

HIGGER'S DRUGS



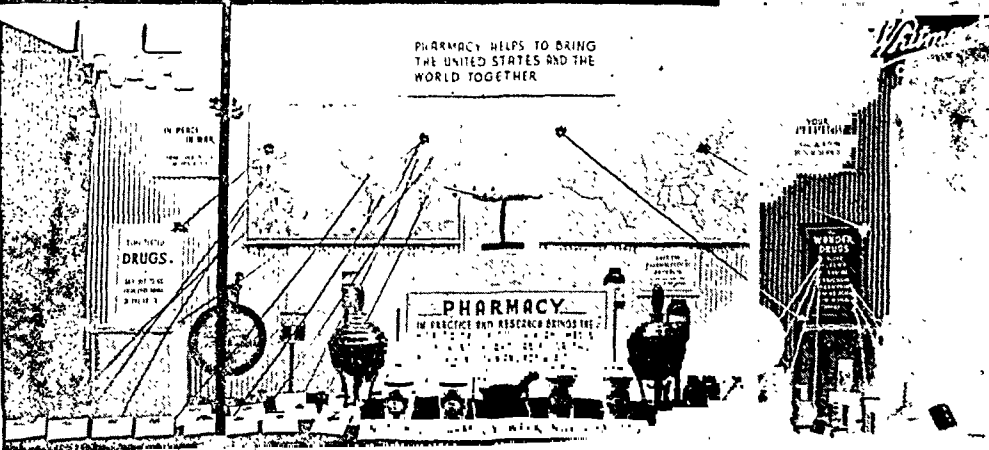
VITAMINS

TOILETRIES

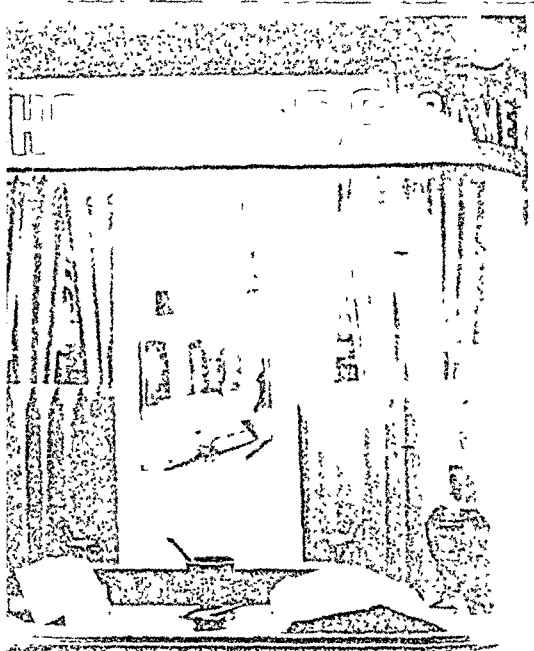
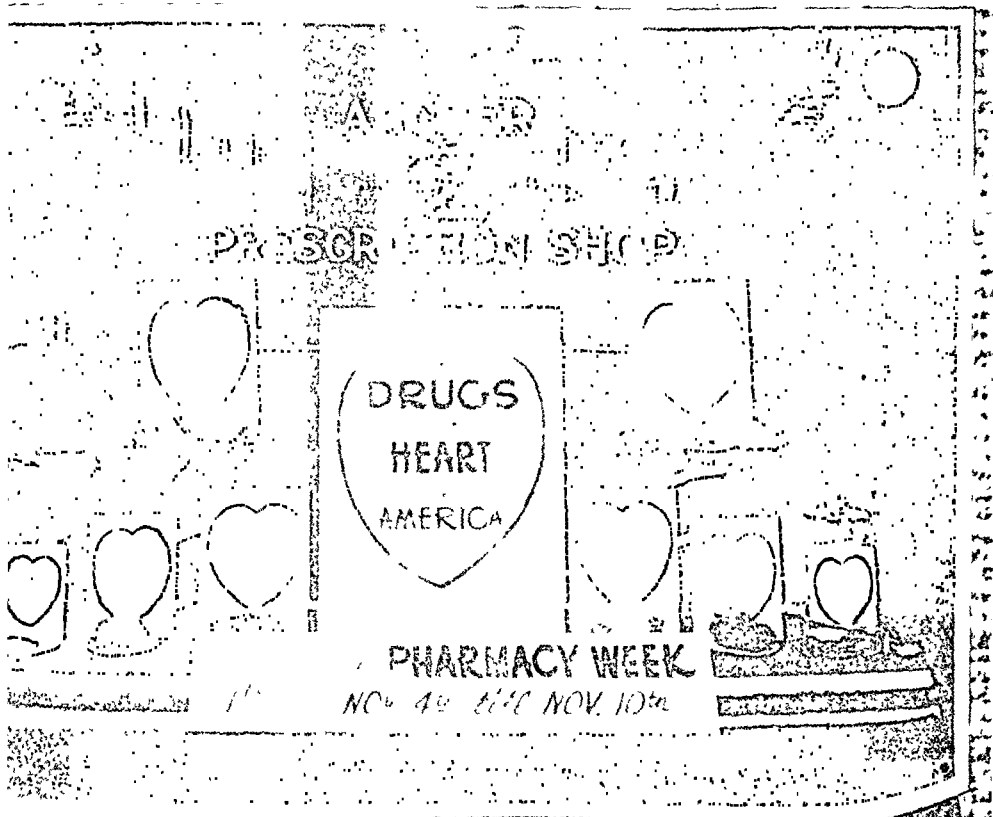
PRESCRIPTIONS

BIOLOGICALS

PHARMACY HELPS TO BRING
THE UNITED STATES AND THE
WORLD TOGETHER



IN PRACTICE WITH RESEARCH BRINGS THE



DRAKE UNIVERSITY College of Pharmacy, first honorable mention in college division of Pharmacy Week display contest - upper left

HIGGER'S DRUGS, Washington D.C. first honorable mention in retail pharmacy division - far left

C. W. SCHMIDT, Archer Pharmacy Shop, Wichita, Kansas - honorable mention in retail pharmacy division - center

HOLLAND'S DRUGS, Bunsick, Kansas - honorable mention in retail pharmacy division - right

PRELIMINARY REPORT ON MAGNESIUM TRISILICATE AS AN EMULSIFIER*

by C. LEE HUYCK
WITH THE TECHNICAL ASSISTANCE OF
LUCY J. PALUMBO and ANITA TRACY

CALCIUM, magnesium, zinc, aluminum and iron hydroxides as well as carbonates¹ form oil soluble soaps with the free acids usually present in animal and vegetable oils. Since they lower the interfacial tension between oil and water on the oil side, globules of water are enveloped and water-in-oil emulsions are produced.

The experimental work reported in this paper describes the use of precipitated hydrated magnesium silicate, commonly known as magnesium trisilicate, as an emulsifying agent for mineral, vegetable and animal oils.

Parsons and Wilson² prepared oil-in-water emulsions of heavy mineral oil using various emulsifying agents. When a soluble soap was used as the emulsifying agent, they found that inversion of phases took place by the addition of a molecular quantity of either magnesium sulfate, magnesium chloride, ferrous sulfate, aluminum sulfate or ferric chloride. The ratios of the equivalents of the metallic ions, rather than their absolute concentrations, were the important factors. Neutral monovalent salts like sodium chloride or sodium iodide broke the emulsions by the salting out process but did not cause inversion of the phases. Amylene seemed to stabilize oil-in-water emulsions in proportion to its concentration.

It has been found³ that emulsification took place when mineral and tar oils were subjected to high-speed disintegration in a colloid mill in the presence of water and colloidal graphite,

calcined magnesium oxide or magnesium carbonate. Talc or graphite may be added to increase the consistency of the product. Pastes were obtained when not more than 6 parts of water to 1 part of oil were employed. Liquid emulsions were prepared when water exceeded this proportion. These products were used as lubricants.

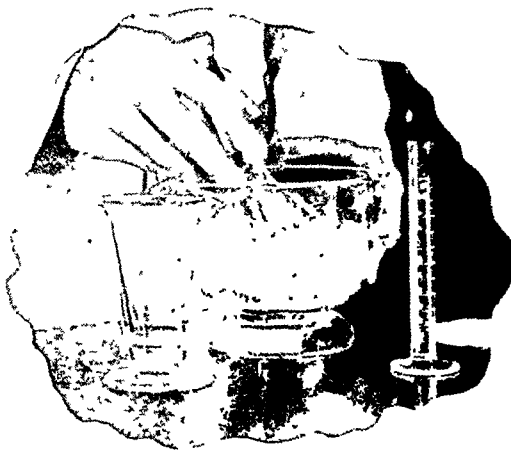
Mead and McCoy⁴ found that when heavy metal soaps were dissolved in heated oil, erratic changes in the oil-water surface tension were produced. Experiments were conducted with magnesium, aluminum and sodium oleates and zirconium, aluminum and magnesium stearates. Zirconium and aluminum stearates gave the regular absorption form of curve. The other heavy metal soaps were either insoluble in the

oil or they so increased the viscosity as to render determination impracticable. Sodium oleate solutions age markedly and may then give a water-in-oil emulsion instead of the usual oil-in-water emulsion. The aging was not found to be due to hydrolysis.

Brown⁵ published the following formula for a mineral oil milk of magnesia emulsion:

Liquid paraffin...	300	cc.
Acacia, in fine powder.....	75	Gm.
Vanillin, in fine powder	0.03	Gm.
Milk of Magnesia, <i>q. s. ad.</i> ..	1000	cc.

Triturate the acacia and vanillin with the liquid paraffin. Add in one quantity 150 cc. milk of magnesia and triturate briskly until emulsified. Then add sufficient milk of magnesia to produce the required volume.



From the Research Laboratories of the Wm. S. Merrell Co.
* The author is indebted to Dr. R. S. Shelton, vice-president and technical director of the Wm. S. Merrell Co. for helpful suggestions in making this study possible.

Neuman⁶ found that oleates of magnesium and zinc promoted emulsions of benzene in water.

Briggs and Schmidt⁷ investigated the emulsification of water by magnesium oleate. The gradual addition of 90% water to benzene containing 1% magnesium oleate made a concentrated stiff jellylike emulsion. This emulsion did not remain stable for more than a few hours. Stiff, viscous emulsions of water in benzene were also prepared using aluminum palmitate, but the water appeared as large irregular drops entangled in a voluminous precipitate of gelatinous character. Such quasi-emulsions separated in about thirty minutes.

Stea⁸ found that the addition of 0.5 Gm. of light magnesium carbonate to an emulsion containing 30 Gm. almond oil and 3 Gm. gum arabic facilitated preparation and permitted the use of only 1.5 Gm. of gum arabic per 100 cc. of finished product. In an emulsion of castor oil,

It has been found¹¹ that olive oil gives a more stable emulsion with magnesium oleate than mineral oil. The most stable pH range was from 11 to 12.5. At pH 2.5 the emulsion was extremely unstable. The surface tension of water-in-oil emulsions was unaffected by pH changes of the internal phase. As a general rule, unstable emulsions have a lower viscosity than stable emulsions. Particle size variations up to an average of 30 microns did not alter the stability of the emulsion.

Experimental Part

Emulsions of heavy mineral oil and light magnesium trisilicate* were prepared by adding the proper weight of distilled water to the light magnesium trisilicate contained in a glass beaker followed by the gradual addition of the proper weight of heavy mineral oil with high-speed stirring. The details concerning emulsions of heavy mineral oil

TABLE I.—PERCENTAGE COMPOSITION AND STABILITY OF EMULSIONS OF HEAVY MINERAL OIL AND LIGHT MAGNESIUM TRISILICATE

NUMBER	DISTILLED WATER	MAGNESIUM TRISILICATE	HEAVY MINERAL OIL	STABILITY AFTER TWO MONTHS AT 37½° C.
A ₁	65.2	19.1	15.7	Unsatisfactory
A ₂	69.65	16.65	13.7	Unsatisfactory
A ₃	73.1	14.8	12.1	Unsatisfactory
A ₄	75.8	13.3	10.9	Unsatisfactory
A ₅	78	12.1	9.9	Satisfactory
B ₁	56.3	16.6	27.1	Satisfactory
B ₂	65.2	13.2	21.6	Unsatisfactory
B ₃	70.9	11	18.1	Unsatisfactory
B ₄	75.09	9.41	15.5	Satisfactory
B ₅	78.2	8.25	13.55	Satisfactory

the addition of magnesium carbonate was not needed, nor was it needed in an emulsion of a mixture of the two oils when castor oil was present in excess or equal to the amount of almond oil. When equal parts of almond oil and castor oil were used to replace the almond oil, it was found that the amount of gum arabic should be slightly increased. If the quantity of castor oil was less than that of almond oil, the addition of magnesium carbonate was necessary. Water was the remaining ingredient in these emulsions.

Howlett⁹ has patented the use of magnesium carbonate as a dispersing agent for oils in water.

Iselin¹⁰ found that calcium, magnesium, zinc, aluminum and iron hydroxides form water-in-oil emulsions. The stability of these emulsions increased inversely with the molecular volume of the hydroxides, that is, the molecular weight of the hydroxide divided by its density. Oil-in-water emulsions of castor, olive, or cod liver oil were formed with caesium, potassium, sodium or silver soaps. The stability of these emulsions decreased inversely with the molecular volume.

and magnesium trisilicate are summarized in Table I. A satisfactory emulsion in this study means that the emulsion remained homogeneous and showed no separation at the end of the aging period.

A minimum of 8.25 parts of light magnesium trisilicate emulsified 13.55 parts of heavy mineral oil.

Emulsions of cod liver oil and light magnesium trisilicate were prepared by adding the proper weight of distilled water to the light magnesium trisilicate contained in a glass beaker, followed by the gradual addition of the proper weight of cod-liver oil U. S. P. with high-speed stirring. The details concerning the emulsions of cod-liver oil and magnesium trisilicate are summarized in Table II.

A minimum of 11.8 parts of light magnesium trisilicate emulsified 20.8 parts of cod-liver oil.

Emulsions of castor oil and light magnesium trisilicate were prepared by adding the proper weight of distilled water to the light magnesium trisilicate contained in a glass beaker followed by

* The magnesium trisilicate was purchased from the Schofield-Donald Co., Inc., Newark, N. J. It is believed that magnesium trisilicate from different manufacturers may differ in emulsifying properties.

TABLE II.—PERCENTAGE COMPOSITION AND STABILITY OF EMULSIONS OF COD-LIVER OIL AND LIGHT MAGNESIUM TRISILICATE

NUMBER	DISTILLED WATER	MAGNESIUM TRISILICATE	COD-LIVER OIL U. S. P.	STABILITY AFTER TWO MONTHS AT 37 $\frac{1}{2}$ ° C.
A ₁	64.55	18.9	16.55	Satisfactory
A ₂	69.1	16.5	14.4	Satisfactory
A ₃	72.55	14.65	12.8	Satisfactory
A ₄	75.25	13.2	11.55	Satisfactory
A ₅	77.5	12	10.5	Satisfactory
B ₁	55.4	16.2	28.4	Unsatisfactory
B ₂	60.4	14.4	25.2	Satisfactory
B ₃	64.2	13	22.8	Satisfactory
B ₄	67.4	11.8	20.8	Satisfactory
B ₅	70	10.9	19.1	Unsatisfactory

the gradual addition of the proper weight of castor oil U. S. P. with high-speed stirring. The details concerning emulsions of castor oil and magnesium trisilicate are summarized in Table III.

A minimum of 10.8 parts by weight of light magnesium trisilicate emulsified 9.5 parts by weight of castor oil.

Discussion of Results

A preliminary study of the type presented, in which the opinion of the author is the sole basis for the evaluation of an emulsion as satisfactory or unsatisfactory, leads to a high experimental error. Another factor which contributes to experimental error is the unpreventable evaporation of water from samples which were stored at 37 $\frac{1}{2}$ ° C. Although screw cap bottles with vinylite liners were used, it is practically impossible to tighten each cap to a point where there is no evaporation of water.

Minimum values of Tables I, II and III are:

Eight and twenty-five hundredths parts by weight of magnesium trisilicate emulsified 13.55 parts by weight of heavy mineral oil. This proportion of ingredients is the most satisfactory of the group since it produced the most fluid preparation after two-months storage at room temperature. It is to be noted that a lower limit was not reached where instability occurred.

Eleven and eight tenths parts by weight of magnesium trisilicate emulsified 20.8 parts by weight of cod-liver oil. This proportion of ingredients is not the most advantageous since it poured with difficulty from the bottle after storage for two months at room temperature. The most advantageous proportion is 12 parts of magnesium trisilicate and 10.5 parts of cod-liver oil.

Ten and eight tenths parts by weight of magnesium trisilicate emulsified 9.5 parts by weight of castor oil. This proportion of ingredients is the most advantageous of the group since it produced the most fluid preparation after storage for two months at room temperature.

Since the emulsifying properties of magnesium trisilicate for vegetable and animal oils appeared to be no better than for mineral oil, emulsification was probably produced by mechanical action or coating the oil globules with an insoluble powder and not by a soap¹ formed from the free fatty acids and magnesium trisilicate. Another point which substantiated this view was that phase testing of the emulsions by the dye method¹² indicated that they were oil-in-water emulsions.

Summary

1. Light magnesium trisilicate is an emulsifying agent for mineral, vegetable and animal

TABLE III.—PERCENTAGE COMPOSITION AND STABILITY OF EMULSIONS OF CASTOR OIL AND LIGHT MAGNESIUM TRISILICATE

NUMBER	DISTILLED WATER	MAGNESIUM TRISILICATE	CASTOR OIL U. S. P.	STABILITY AFTER TWO MONTHS AT 37 $\frac{1}{2}$ ° C.
A ₁	64.2	18.8	17	Satisfactory
A ₂	68.65	16.45	14.9	Satisfactory
A ₃	72.2	14.6	13.2	Satisfactory
A ₄	75	13.1	11.9	Satisfactory
A ₅	77.25	11.95	10.8	Satisfactory
B ₁	55	16	29	Unsatisfactory
B ₂	59.8	14.3	25.9	Satisfactory
B ₃	63.7	12.9	23.4	Satisfactory
B ₄	67.05	11.75	21.2	Unsatisfactory
B ₅	79.7	10.8	9.5	Satisfactory

oils when used in the proportions indicated.

2. Since oil-in-water emulsions were produced, emulsification was probably brought about by mechanical action and not by soap formed from the interaction of free fatty acids present in the oils and light magnesium trisilicate.

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PAUL JANNKE AWARDED EBERT PRIZE

DR. PAUL JANNKE of the University of Nebraska College of Pharmacy has been awarded the 1945 Ebert Prize as senior author of the paper, "Sclerosing Agents—Sodium Morrhuate." Howard Jensen received special mention as co-author and collaborator.

The prize-winning paper, published in the *Scientific Edition* of THIS JOURNAL (33: 362, 1944), represented original research, on a widely used sclerosing agent for obliterating varicosities. Investigations were supported in part by a fellowship from the AMERICAN PHARMACEUTICAL ASSOCIATION. Grants-in-aid for early stages of the work were made by the American Association for the Advancement of Science and the Nebraska Academy of Arts and Science.

Experimental results indicated that the salts prepared from the more nearly saturated fatty acids of cod-liver oil are highly effective as sclerosing agents, and their action is accompanied by minimum irritation of short duration.

Evidence was offered to show that commercial samples of sodium morrhuate differ greatly in physical, chemical and pharmacologic properties. For estimating the sclerosing properties of sodium morrhuate, the iodine number of the free fatty acids did not prove reliable. Dr. Jannke also found that the presence of a completely soluble precipitate in sodium morrhuate solutions for parenteral use does not indicate inferiority as regards desirable sclerosing properties.

The Ebert Prize was awarded for this work on the recommendation of the Ebert Prize Committee of the Scientific Section of the AMERICAN PHARMACEUTICAL ASSOCIATION. With permission of the A. Ph. A. Council, the selection was based on experimental papers published in the *Scientific Edition* during the previous year. This

policy has been recommended by the Committee as standard procedure in selecting future winners. The award is made through a fund established in 1873 by Albert E. Ebert.



PAUL JANNKE

PHARMACY IN THE BRITISH ISLES

by SAMUEL KOHAN

UPON the conclusion of hostilities in Europe the Army instituted an educational program under the direction of the Information and Education Division which permitted qualified personnel to pursue various courses of study of either academic or practical nature. French and British universities cooperated in this program and sections of English industry participated by allowing "observers" in their establishments. Acting for British pharmacy, the Pharmaceutical Society of Great Britain sponsored the placement of pharmacists in hospitals and retail pharmacies for a period of three weeks. Although Army personnel were intended to act only as observers, all who participated in this program worked at compounding, manufacturing or dispensing, volunteering for such duty upon noting the need for such aid.

On arrival at I-E Headquarters for the United Kingdom at 27 Grosvenor Square, London, pharmacy students were given their choice of selecting a hospital or retail pharmacy as their place of study. The writer selected Fulham

A. PH. A. MEMBER OBSERVES ENGLISH PRACTICE THROUGH ARMY EDUCATION PROGRAM

Hospital, in London, and reported there the following morning. It was found that the hospital was "blitzed" several times, resulting in the total destruction of one wing. The pharmacy was staffed by two woman pharmacists and a male assistant. As soon as introductions were over the writer was at work manufacturing various preparations. With a copy of the National War Formulary in one hand and a copy of the British Pharmacopoeia in the other very little difficulty was encountered.

The National War Formulary issued by the Ministry of Health directed the course of operational procedure for British pharmacy during the war and is still in force. Its aim was "to provide a selection of medicines sufficient in range to meet the ordinary requirements of therapeutics, to retain as far as possible the more valuable and more frequently prescribed preparations, modified where necessary, and to eliminate nonessential drugs. Alternatives have been provided, where practicable, for certain drugs which are short in supply." Due to the general use of the Formulary most impressions of British pharmacy were those based on wartime practice.

The first strange encounter was the use of 20-ounce bottles and its multiples. As most liquid medication was administered in 0.5-ounce doses t.i.d. this necessitated the use of 20-ounce containers in the majority of cases. If a prescription indicated its use for thirty days the patient was loaded down with enough medication to last that period. Smaller quantities were not dispensed in such instances, as it added to the tasks of an already overburdened staff should renewals be encouraged. Upon inquiry it was learned that the half-ounce dose was the average one employed for most liquids. Although England was experiencing a severe glass shortage the government dared not lower the dosage by concentrating medications for fear of accidents. The English people had long been educated to the half-ounce dose and it was thought wise not to alter this precept.

Another strange custom was the use of spoken abbreviations. Words like "potcit," "ammon-

Editor's Note: A. PH. A. member Samuel Kohan, of New York City, was one of the pharmacists chosen by the Army to participate in the on-the-job training program in England. In the accompanying article he gives some impressions of British pharmacy while serving as an observer in a London hospital pharmacy. Pharmacists, and members of other professions and trades, were given this opportunity as "refresher" training, to learn something of the British people and their institutions and to hasten readjustment to civilian life while awaiting return to the States. The essential value of the program was expressed in a letter to Mr. Kohan by Secretary Hugh N. Linstead of the Pharmaceutical Society of Great Britain when he said: "British pharmacy is glad of this opportunity to strengthen the ties of friendship between our nations, and hopes, in addition, that the exchange of pharmaceutical information and ideas made possible by the scheme will be to the ultimate benefit of pharmacy as practiced by both our nations."

During the war Mr. Kohan served a year in the Chemical Warfare Service, two years in charge of the pharmacy at Lowry Field, Colorado, and later with the Military Intelligence Service in the European theater.

carb" and "magcarb" sounded foreign until they were written and deciphered. The writer followed this procedure as a measure of precaution, not only because such phraseology was new, but one never could be certain what was intended when it was also spoken in a true English accent. The writer confirmed the use of word abbreviations as a common practice in British pharmacy.

The technical differences were legion. Tinctures were replaced by "liquid extracts." Emulsions of chloroform and peppermint were used for flavoring purposes. The most common antiseptics employed were solutions of mercury oxycyanide, mercury biniodide and chloramine. Syrups were strictly limited to infant use and were termed "linctuses." Many of their Misturas did not follow the American pattern for such preparations as they were more closely allied to our Liquors.

The use of proprietaries was limited to bare necessities and physicians were urged to write for B. P. equivalents. A very useful guide for this practice was the printed list in the National War Formulary together with their authorized substitutions. A peculiar difference in terminology was noted for the barbiturates, and still remains without explanation. All such products bore the suffix "-one" in their names. For example, phenobaribital was called "phenobarbitone."

Concerning retail pharmacy, it was noted that some drugstores did no dispensing and were comparable to the German "drogerie" where only patent medications were sold. Most pharmacies, or chemists, as they are called, closed shop about 6 p. m. This is an old custom and not a result of the war. Most students engaged in retail establishments were unanimous in their observation of the great respect afforded pharmacists by the public. None of the pharmacies operated soda fountains or engaged in general merchandising. Pressure selling was an unheard-of thing and the fulfillment of a patron's wish was the only duty of the seller. This evoked much comment from those who at one time had been employed in cut-rate establishments in the States.

The writer is incapable of giving a more detailed picture of retail pharmacy because of his assignment at a hospital. It is hoped that some student who participated in the retail program will relate his experiences.

The participation of the writer in the pharmacy course offered by the Army was a novel and thrilling experience. It introduced him to methods of pharmacy as practiced in a foreign land and also an opportunity to study his English fellows. In a moment of history when only mutual understanding and respect can assure a lasting peace among nations, the good will fostered by the Army

educational program was an important step in this direction. The Information and Education Division deserves high commendation for its efforts.

A. M. A. JOURNAL CONDEMNS NEW NAMES FOR PENICILLIN

The *Journal of the American Medical Association* (130: 279, 1946) editorially charges that "leaders in the drug and chemical industries, apparently avid for the kind of profits that can be derived from well-exploited medical specialties, have let their imaginations and their greed run riot in a search for specific trade names to designate some penicillin products."

The editorial says that the name "penicillin," which truly reflects the source of the product, was deliberately chosen as a descriptive title. The modesty of the investigators led them to avoid using their proper names as the title.

"Instead of selling penicillin under its simple and well-known name," the A. M. A. editorial says, "they [the manufacturers] have become downright silly and offer penicillin under so many names that only a professional solver of crossword puzzles could guess the nature of the products that these names conceal."

Some of the new penicillin names which the editorial listed were: Amphocillin, Penioral, Bucillin, Topicillin, Delacillin, Ledericillin-G and Per-Os-Cillin.

"Some of these are for oral use," the A. M. A. *Journal* says, "some for local application, one is to be mixed 'before taking' with something else. The promulgators of these products and their sale are interested in helping their own pocketbooks by trying to make certain that the prescribing physician will limit himself to their products:

"But who could guess that Amphocillin and Bucillin refer to penicillin for oral use? Who can believe that Delacillin is really penicillin calcium in peanut oil and beeswax? You might surmise the nature of Ledericillin-G, but we will lay eight to five that you would miss on Penioral. Would you think it useful especially for gonorrhea? Well, that isn't it. Then what about Per-Os-Cillin? Something concerned with an opening, but which one?

"Some day scientific aims and business promotion will be more closely knit. When that day arrives every one will breathe a sigh of relief, including the promoters. Perhaps they will finally realize that a scientific approach gains the confidence of the prospective buyers and really promotes use."

Science News Capsules

COMPLETION of the 200-inch telescope at Mt Palomar will permit observations to test a new concept of *relativity*. This theory reduces the population of the universe to only about 11 billion galaxies. It is expected that the huge telescope will bring into visual range remote galaxies whose light spends up to 1000 million years reaching us. The notable difference between theories largely centers on the distribution of these hitherto unseen star systems.

Jap victims of the atomic bomb did suffer "true forms of *radiation sickness*," according to Comdr J J. Timmes, Navy medical officer. Symptoms included fever, loss of appetite, bleeding gums, bloody diarrhea and an aplastic type of anemia. Many patients lost their hair. Teeth were loosened and could easily be removed. Gold fillings subsequently examined contained radiant energy. The idea that the bombed area would continue to be radioactive following the blast is dispelled, however, by the Navy findings.

Susceptibility to *infantile paralysis* increases in summer possibly because of the effect summer heat has on body chemistry. This suggestion from the University of Tennessee is based on studies of the effects of temperature on polio susceptibility in mice.

A giant prominence, similar to the huge flame-like clouds of gas which erupt from the surface of the sun, has been discovered on one component of the *double star Zeta Aurigae*. The huge cloud of gas may be nearly as large as the sun itself, according to the Harvard College Observatory.

With the isolation of the *St Louis encephalitis* virus in California for the first time and definite evidence that fowl are the main reservoir of the disease, medical scientists are trying to fit together the general pattern of this so-called sleeping sickness in the Western states. Fowl, both domestic and wild, are the principal reservoirs of the virus. Mosquitoes, especially *Culex tarsalis*, feed on the fowl, then bite horses and man.

An English-built combination land-plane, float-plane and ski-plane, called the *Aerocar*, will soon be ready for testing in flight.

An awe-inspiring picture of how *Loran* might be developed to guide pilotless aircraft and bombs in any future warfare was described at the recent meeting of the Institute of Radio Engineers. Civilian ships and planes of the future may also be guided without human assistance and with no possibility of deviating from a fixed course. *Loran*, a wartime development of American science, is similar to radar

but differs in having the transmitters at fixed points on the ground along coast lines or on islands, and only receivers in the planes or ships.

High praise for *American glass and lens makers* comes from Col G W Goddard of the Air Technical Service Command, indicating that lens products made in America during the war were superior in certain cases to the German types traditionally used. Camera lenses and shutters were equal to, if not better than, any ever produced in Europe.

The radio waves bounced off the moon in the Army's radar experiments were not the first radio waves to arrive on earth from outer space. A *cosmic radio hiss* that seems to originate in the stars of the



ERYTHROCYTES appear as shown above when magnified approximately 7500 diameters. Details of the plate-like red cells, with deep depressions in the center, are revealed in this electron micrograph made possible by a new replica technique. The impression of a blood smear left on thermoplastic film is permanently recorded by depositing a thin silica film upon it. The silica cast is then photographed. This technique has proved useful when specimens are too dense to be photographed satisfactorily at very high magnifications.

Milky Way or in interstellar space was discovered in 1932. This Milky Way static is probably the first radio impulse received from outer space, although the moon-reflected radar wave is the first man-made radio signal to be received on earth after a travel in outer space.

Elastic plastic, a polyvinyl resin called Marvinox, will be available within a year in the form of swim suits, purses, gloves, shoes, raincoats, umbrellas, as well as transparent garden hose and multi-colored wire insulation, according to the Glenn L. Martin Co.

Chemical liquids which vaporize only at high temperatures may be the future mediums for conveying heat in homes, instead of water and steam. Tetra-cresyl silicate and other compounds are being extensively investigated.



The Cyclone 9HD, said to be the world's most powerful air-cooled engine per pound of weight, will soon be in use in transport planes. Each engine weighs 1352 pounds and produces 1425 horsepower.

Development of *economical atomic power* is not a simple extrapolation of knowledge gained from atomic bomb work and much intensive laboratory research must precede peacetime applications, according to General Electric's research director. He rules out the use of atomic power for automobiles and railroad locomotives as impractical but called propulsion of large ships "not only possible but attractive." Atomic power plants for electric power generation are foreseen as competing successfully at some future time with coal, oil and water power energized plants.

Plastic body armor made of laminated glass cloth was ready for use in combat jackets by Navy and Marine personnel when the war ended.

A chlorinated hydrocarbon ($C_{10}H_6Cl_8$) may become a competitor of DDT and is claimed to be even deadlier to some insect species. The practical value of "1068" will apparently depend on future findings concerning toxicity in animals other than insects.

"SOFAR," an underwater sound system developed by the Navy in cooperation with Woods Hole Oceanographic Institution makes it possible to locate survivors of plane and ship disasters far at sea. A TNT charge dropped underwater by the survivor and timed to explode at a depth of 3000 to 4000 feet sets up underwater sound waves that are picked up by hydrophones at shore stations. The deep water sound zone, the existence of which was only recently confirmed, produces a "speaking tube" effect. Survivors can be located within a square mile of sea as far as 2000 miles from shore, it is claimed. No other man-made sound has ever been heard more than a small fraction of this distance.

A new *tanning compound* for leather (Monsanto), to replace the natural product formerly obtained from chestnut trees, has been synthesized following a

study of the molecular structure of natural tannin extracts.

Jet-propelled private planes are a possibility of the near future as a result of fundamental research being conducted by the National Advisory Committee on Aeronautics.

Thoroughbreds really do have blood that is different from that of other horses. Cornell scientists found that *thoroughbred racers* have smaller erythrocytes and lower hemoglobin concentration in the cells than work horses. But the number of red cells per cc. of blood is by far the highest in race horses. This provides a larger quantity of oxygen-carrying hemoglobin per unit volume, which would supposedly be an advantage in high-speed running.

Unborn female mice that never lived to see the light of day have nevertheless become the mothers of new broods of mice. In unique experiments at the Jackson Memorial Laboratory in Bar Harbor, Me., dead embryo mice were enabled to produce living offspring through the transplantation of their still immature ovaries into the bodies of other female mice whose ovaries had just been removed. The technique may be scientifically valuable in deciding relative importance of heredity and maternal environment, to provide an opportunity to study the effects of hormones in prenatal development and the significance of hereditary factors in cancer.

DDT in dog soap may provide a simple way to eliminate the flea problem. British experimenters found that dogs washed with the soap are not only rid of vermin but do not become reinfested for some time. Only 1 of 12 dogs treated had picked up a few fleas after nine weeks.

Work has been resumed on a 4000-ton cyclotron at the University of California, which will be three times larger than any now available. Prof. E. O. Lawrence, physicist and Nobel Prize winner, predicted that the machine may result in atomic energy from cheaper sources than uranium, the discovery of new elements, and the artificial production of cosmic rays.



Improved methods of producing *chlorine and mercury* that may benefit the United States have been discovered in Germany. A commission is visiting Europe to secure technical information on the mercury chlorine cells, which will be brought to this country by the Army Chemical Warfare Service.

Two plants are to be constructed to produce the heavy carbon isotope, *carbon 13*, the Sun Oil Co. and Houdry Process Corp. have announced. World supplies of this chemical element will thus be increased at least 500 times. Carbon 13 is used as a tracer in chemical reactions in both living and non-living material, a valuable technique in research on many diseases.

Nitric oxide can now be made by a simple inexpensive method developed at the University of Wisconsin which promises to replace the electric arc and the Haber methods in nitrate production.

Newly discovered *brazilianite*, a yellowish-green gem stone of unique chemical and crystallographic properties, is the first new mineral with gem-stone possibilities to be described since 1909.

Adequate supplies of the new *insect and chigger repellent* called "612" are expected to be on the market next summer. Chemically the compound is 2-ethylhexanediol-1,3. Under laboratory conditions one application keeps mosquitoes away for an average of about nine hours.



Remains of a type of *human culture* hitherto unknown, have been excavated in the Soviet republic of Azerbaijan. Archaeologists place the culture in the first millenium B.C., during the bronze and iron ages.

A *non-petroleum motor oil* for automobile and aircraft engines has been placed on the market in limited areas. The new product (Prestone) is said to flow freely at -30° F. and does not thin out at high temperatures. It can thus be used the year around without change of grade.

Adaptation to *civilian aviation* of various radar devices and heat de-icing for wings and propellers should result in completion of flights 99% of the time, as compared with the present average of 91%, the research director of Curtiss-Wright predicts.

A lower-cost method for purifying *sulfathiazole* has been reported in a patent (No. 2,392,125) assigned to the American Cyanamid Co.

Rear-engine automobiles are a possibility by 1947 or whenever public demand develops, it was reported at a recent meeting of the Society of Automotive Engineers. Rear-mounted engines in test cars resulted in better traction, easier steering and permitted better utilization of body space.

Tetrachloro-diphenyl-ethane (TDE), a chemical relative of DDT, is even deadlier in its effects on mosquito larvae and has a more prolonged action. U. S. Department of Agriculture experiments are still in the preliminary stage.

Vitamin A, hitherto obtained from fish liver oils, has been synthesized at M. I. T. Only preliminary work has been done to translate the laboratory synthesis into terms of a commercial production process.

A coaxial cable line now ready for transmission of *television* pictures and sound between Washington, D. C., and New York City is the first link in a national network of over 6000 miles planned by the Bell System, and will be used both for television and telephone.

Alkyl sulfates, which are used in "soapless" soaps and shampoos, may provide a remedy for "peptic"

ulcers (*Science*, Jan. 11, 1946). These chemicals act on stomach tissue to stimulate secretion of mucus, and may inactivate pepsin under certain conditions. A constantly renewed layer of mucus, present evidence indicates, is the chief protection of the stomach lining against the destructive action of gastric juice and consequent ulcer formation. Experiments with alkyl sulfates, particularly sodium dodecyl sulfate, to enhance this protective mechanism are still in the laboratory stage.

The *electric eel* has used principles somewhat similar to radar for millions of years to locate living food. In the muddy South American streams where they live, electric eels send out frequent electric impulses which, striking such food possibilities as other fish or frogs, bounce back and affect the sender's sensory apparatus. Having detected food, or perhaps an enemy, the eel discharges a shock of several hundred volts, sufficient to stun his quarry.

America's first wave of *immigrants* "came across" only 15,000 or 20,000 years ago, says Dr. F. H. H. Roberts, Jr., Smithsonian Institution anthropologist. Before that the road from Asia to Alaska had been blocked by impassable glaciers for at least another 20,000 years during the last great Ice Age.

(Condensed from Science Service)

PROCTER MEDAL AWARDED TO DR. A. N. RICHARDS

The Procter Medal, established by the Philadelphia Drug exchange in honor of William Procter, Jr., has been awarded to Dr. A. N. Richards, professor of pharmacology and vice-president in charge of medical affairs of the University of Pennsylvania.

Dr. Richards, who has been chairman of the Committee on Medical Research of the Office of Scientific Research and Development since 1941, received the award "for distinguished services in the fields of physiology and pharmacology as teacher, author, researcher and administrator, and specifically for his untiring effort and contribution toward the early accomplishment of the production of penicillin."

Speakers at the presentation dinner held in Philadelphia were Dr. Chester S. Keefer of Evans Memorial Hospital, Boston, and Fred J. Stock of the Charles Pfizer Co. Mr. Stock was with W. P. B. during the pioneering days of penicillin production, in which the Medalist, Dr. Richards, played an important part.

Presentation of the Procter Medal was made by Dr. Charles E. Vanderkleed of McNeil Laboratories. Frank F. Law of Wyeth, Inc., was the toastmaster.

ANTISEPTIC MERCURY

by MARY ESTILL MARTIN*



NITROMERSOL

INORGANIC mercury compounds, particularly mercuric chloride, which were introduced into medicine soon after phenol, were among the first antiseptics and disinfectants to be used. Although still in use, these compounds have been found to have a germicidal activity much lower than originally supposed. The following discussion will be limited to nitromersol and its preparations,[†] phenylmercuric chloride,[‡] phenylmercuric nitrate,[‡] and mercuric cyanide,[§] mercurials which have been admitted to the eighth edition of the National Formulary.

It should be noted that the mercury compounds organic and inorganic, are bacteriostatic but may be bactericidal under certain conditions. They cannot be relied upon to kill bacterial spores.¹

For bacteriostatic action, the inorganic mercury compounds must be in the ionic state, the mercury ion being a precipitant for protein. This action, according to Goodman and Gilman, is by no means specific for bacterial protoplasm, precipitating the protein of tissues as well as that of microorganisms.

Therefore the inorganic mercurials are very irritating to tissue, have poor penetrability, and lose much of their germicidal potency in an excess of extraneous protein.² Inorganic mercurials have also been found to be systemically toxic after absorption. As these compounds are corrosive to metal, they cannot be used satisfactorily in the

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[†] Available as Metaphen through Abbott Laboratories, North Chicago, Ill

[‡] Available as Merphenyl Chloride or Merphenyl Nitrate from Hamilton Laboratories, Asheville, N. C

[§] Available from Merck and Co., Rahway, N. J., or Mallinckrodt Chemical Works, St. Louis 7, Mo

COMPOUNDS ADMITTED TO N. F. VIII

FIRST OF A SERIES ON DRUGS NEWLY ADMITTED TO THE NATIONAL FORMULARY

disinfection of surgical or dental instruments.

Because of these disadvantages of the inorganic mercury compounds, such as mercuric chloride and mercuric iodide, they have been replaced to a large extent by complex organic compounds of mercury.

The mechanism of action of organic derivatives has not been fully explained. The simplest theory is that, like the inorganic mercurials, they are effective through the release of ionic mercury. However, this theory is hard to accept since the organic mercurials are more powerful germicidal agents than the inorganic salts even though they are not as highly ionized as the inorganic salts.

Furthermore, the organic compounds of mercury have a specificity of action which is not to be expected from simple protein precipitation alone. How seriously this argument may be taken is questionable since mercuric chloride also has somewhat of a selective action against certain microorganisms.

In 1940 Fildes presented evidence that mercurials exert a bactericidal action in much the same way as arsenicals exert a treponemicidal action, namely, by combining with sulfhydryl groups of the bacterial cells and in this way interfering with cellular metabolism.² Probably this explains how organic mercurials, which have virtually no protein precipitant action, are extremely potent agents.

In general, the organic compounds of mercury are less irritant and less toxic than the older salts. The organic mercurials have a greater bacteriostatic activity by *in vitro* experiments, and have also a greater tissue penetrability than the inorganic mercury compounds.

For these reasons, nitromersol, phenylmercuric chloride, and phenylmercuric nitrate have been admitted to the eighth edition of the National Formulary.

Mercuric Cyanide

Among the inorganic mercurials, mercuric cyanide has been admitted to N. F. VIII. It is as active as mercuric chloride and is less irritating to tissue. With mercuric cyanide, protein precipitation is absent because of the nonionization of the compound by virtue of the complex molecule.

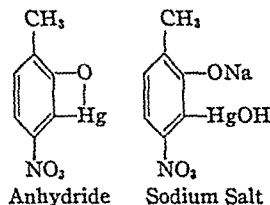
Mercuric cyanide is used locally as an antiseptic and can be applied to mucous membranes. It may also be used internally as a diuretic. In

1922 Blum and Schwab recommended this drug as a diuretic in cardiac, but not renal, disease. They suggested doses of 40 to 50 mg. by intravenous or intramuscular injection. However, they point out that mercuric cyanide should be used only as a last resort after other drugs have failed.¹ Mercuric cyanide has also been used as an antisyphilitic in the late stage of syphilis of the central nervous system, the heart, or liver where arsenicals are initially contraindicated.⁴ From 1.5 to 2 cc. of a 1% solution may be used hypodermically without causing local irritation. A dose of 10 mg. daily for not more than twenty days has been suggested for intravenous or intramuscular injections.

In diphtheria and croup, mercuric cyanide is used in a 1:10,000 solution as a gargle, and, in fibrinous rhinitis, it is used on a tampon in a 1:2500 solution. Solutions of 1:4000 to 1:2000 may be used for application to the eye and mucous membranes.

Nitromersol

Nitromersol is the anhydride of 4-nitro-3-hydroxy-mercuri-*ortho* cresol (originally introduced as Metaphen). When nitromersol is dissolved in the presence of alkali, the anhydride ring opens forming the sodium salt, which is the form in which the drug is usually dispensed.



Nitromersol is used as an antiseptic on the skin and mucous membranes. It may be injected, but its effectiveness parenterally has not been proved. It is claimed to be more germicidal than mercuric chloride when tested on cultures of *Staphylococcus aureus* and *Eberthella typhosa*. Because nitromersol has only a slight protein precipitating action, it is relatively nonirritating and nontoxic. White rats were found to tolerate doses of 6 mg. per Kg. when injected intravenously, and 30 mg. per Kg. when injected intramuscularly.⁵

In dental and surgical use, nitromersol, and also mercuric cyanide, is used as a disinfectant for instruments because it has no deleterious effect on

metal or rubber. However, like all cold disinfectants, these agents have serious limitations. It must be remembered also that they are not effective against bacterial spores.

A solution of arspenamine in nitromersol, 1:1000, has been suggested for Vincent's infection, but there is no evidence as to its advantages over a simple glycerin solution.⁵

A monograph for nitromersol has been prepared and since nitromersol is most frequently used in an alkaline solution, a monograph has also been developed for such a solution, 1:500.

The alkaline solution of nitromersol, 1:500, may be diluted for specific uses. A 1 in 5000 to a 1 in 1000 solution has been employed for disinfecting instruments but no sporulating pathogenic organisms should be present if so used; 1 in 5000 and 1 in 1000 is used for application to the skin; and 1 in 10,000 to 1 in 5000 for ophthalmic and urethral irrigation.

Dilutions made from the 1:500 solutions are not very stable and precipitate quite rapidly upon exposure to the carbon dioxide of the air. Consequently all such dilutions should be prepared fresh just prior to use.

The nitromersol tincture, which is nitromersol dissolved in an alkaline mixture of acetone, water and alcohol, is also used as an antiseptic. It is used as a preoperative disinfectant in the dental area and as a general surgical antiseptic, probably being superior to the aqueous solution.

Phenylmercuric Compounds

Phenylmercuric chloride and basic phenylmercuric nitrate were the first of the organic mercurials of their type found to possess effective bacteriostatic and bactericidal activity against certain pathogenic microorganisms. Evidence indicates that the germicidal activity is due to the phenylmercuric ion. In general, the phenylmercuric compounds are said to be highly dissociable in solutions, yielding the phenylmercuric ion.

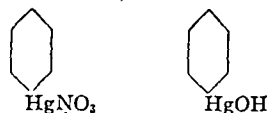
Solubility is a limiting factor in the effectiveness of these compounds. Since phenylmercuric chloride is soluble in water only to the extent of 1 part in 20,000, it has been replaced to a great extent by the more soluble basic phenylmercuric nitrate, soluble 1 part in 1200.

Since the phenylmercuric ion is responsible for the germicidal activity of these compounds, it is necessary to consider its stability. The phenylmercuric ion, $(C_6H_5Hg)^+$, is more stable in acid than in alkaline solutions. Aqueous solutions buffered with inorganic or organic acids are relatively stable. Because buffered solutions of

phenylmercuric salts are less irritating to tissue and more stable than unbuffered solutions, the former are preferable.

"The presence of buffered solutions of phenylmercuric salts does not interfere with the precipitation reaction of human serum, the action of the complement, the digestive action of pepsin and trypsin or the antigenic power of vaccine."⁶

A monograph has been prepared for phenylmercuric nitrate which is claimed to be a molecular compound of phenylmercuric nitrate and phenylmercuric hydroxide in equal amounts, for which structural formulas are given below. The



compound is used as an antiseptic for prophylactic and therapeutic disinfection of the skin, superficial abrasions, lacerations, wounds, and infections.

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ULCER PATIENTS NEED FOOD AT NIGHT TO NEUTRALIZE ACID

Patients with ulcer of the stomach need to be fed at night to neutralize the acid present which retards healing (*J. Am. Med. Assoc.*, 130: 258, 1946).

David J. Sandweiss, M.D., from Detroit, Major Marcus H. Sugarman and Captain Harold M. Podolsky, of the Medical Corps, A. U. S., and M. H. F. Friedman, Ph.D., of Philadelphia, studied gastric secretion in 38 normal persons and 29 ulcer patients at the Harper Hospital and the North End Community Fund Clinic, Detroit.

The authors conclude that although the ulcer patients have no greater volume of gastric juice at night than normal persons, the evidence indicates that they retain more of the juice and acid in their stomachs. Therefore, in order to prevent the acid from irritating the ulcer at night, feeding is essential.

The Hospital Pharmacist

EDITORIAL

INTERNSHIPS FOR PHARMACY GRADUATES

by LEO F. GODLEY

AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

ALTHOUGH there has been a welcome post-war influx of students into our pharmacy colleges, the size of advanced classes remains pitifully small. Every one of the graduates receiving degrees this spring will be badly needed to fill persistent demands for professional personnel. Hospitals are not the least of those clamoring for pharmacists.

In some sections of the country, the full value of hospital pharmacy has not been realized either by the administrative bodies of the hospitals or by pharmacists or by the schools of pharmacy. It is hoped that the unusual opportunities for professional practice in hospital pharmacy will be made clear to students, so that they may carefully weigh its possibilities in choosing the type of practice in which to engage.

The graduate's first impulse, upon deciding to give hospital pharmacy a trial, might be to locate a small hospital that needs a pharmacist and there try to find immediately the great satisfaction that hospital pharmacy has been alleged to offer. It should be brought out at this point that a hospital pharmacy is also a fertile field in which to encourage and nurture the malignancy that continually threatens the foundation of pharmacy: inadequately trained personnel, inadequate equipment, and contentment with a minimum scope of professional service.

This has been demonstrated in too many hospitals and is often the kind of department that a prospective hospital pharmacist happens to see. This is the type of department that the American Society of Hospital Pharmacists with the help and cooperation of the American Hospital Association is trying to wipe out through the education of hospital pharmacists and hospital administrators.

Leading hospitals in several states have offered

for the past decade a training period for hospital pharmacists. This period of instruction is called an "internship" and the student is called a "pharmacy intern." The internship usually lasts for a year, during which the intern is given comprehensive instruction and practice in hospital pharmacy. This includes professional poise, prescription preparation, bulk manufacturing, sterile solution and ampul manufacturing, purchasing, research and administration. In most cases the pharmaceutical intern receives, in addition to invaluable instruction, full maintenance (or its equivalent) and a small stipend.

It is hoped that interested graduates will apply for admission* to the staff of a well-operated hospital pharmacy for a training period of a year or until they feel competent to apply for one of the places that require the services of a well-qualified hospital pharmacist.

It has been proposed, and will probably be adopted, that the American Society of Hospital Pharmacists approve hospitals for pharmacy internships. Also it has been advanced for consideration by the Society that to qualify as a hospital pharmacist, the candidate must have successfully completed an approved internship or its equivalent. Research and study are constantly going on among groups and committees of the national body in order that a full list of qualifications of the hospital pharmacist might be standardized and legalized.

The fact that the leading and progressive colleges of pharmacy are including special hospital pharmacy courses in their curriculum is predicated upon the established necessity and import-

* Anyone interested in obtaining an internship appointment is invited to address Don E. Francke, chairman, American Society of Hospital Pharmacists, 1313 Ann St., Ann Arbor, Michigan.

ance of hospital pharmacy. This trend will do much toward simplifying the internship and leave more time for advanced study and research in this specialty. It is highly desirable that during the period of training the intern be able to take graduate courses in physiology and pharmacology. While at present the procedure is far from standardized, it is safe to say that until such standardization is accomplished the present internships offer the best approach to a career in hospital pharmacy.

PHARMACY LAW APPLICABLE TO PENNSYLVANIA HOSPITALS

Hospital pharmacies in Pennsylvania must be under the supervision of a licensed pharmacist and otherwise comply with the state pharmacy law, according to a formal opinion (No. 533) by the state's Department of Justice.

The ruling is considered to be particularly significant since the status of hospital pharmacy under pharmacy laws has been uncertain in many states.

In Pennsylvania, the attorney general stated, "hospitals come within the purview of the Pharmacy Law, unless exempted by other laws." The Law defines "pharmacy" as follows: "The term 'pharmacy,' when not otherwise limited, shall, for all the purposes of this act, be taken to mean a retail drugstore, or any place where drugs, medicine, or poisons are compounded, dispensed, prepared, or sold at retail; . . ."

In considering the question of whether or not hospitals must also pay the permit fee of \$2, the attorney general expressed the opinion "that the fee is a license fee and not a tax, and consequently the hospital cannot claim the benefit of any tax exemption law."

WHOLESALE FINED \$87,000, CLOSING ANTITRUST CASE

The government's four-year-old antitrust case against the National Wholesale Druggists' Association, 23 wholesale drug companies and 29 executives has ended with the imposition of fines aggregating \$87,000. When the government dropped the case against all individual defendants, counsel for the wholesale druggists withdrew the corporate defendants' plea of not guilty and interposed a plea of *nolo contendere*. Thereupon fines were imposed upon all of the corporations and the case was closed.

TENTH U.S.P. SUPPLEMENT ISSUED, NEW QUINIDINE SOURCES OFFICIAL

The Tenth Sheet Supplement to U. S. P. XII has been issued due to new developments and improved supplies of some drugs. Copies may be obtained without charge from the U. S. P. Revision Committee, 4738 Kingsessing Ave., Philadelphia 43.

The interim revision authorizes new sources of quinidine sulfate, which has been in short supply. The alkaloid prepared from *Remijia pedunculata* Triana or from quinine becomes official, as well as that from the traditional cinchona sources.

Remijia barks were developed in South America as a commercial source of quinidine and quinine during the war. Quinidine sulfate U. S. P. produced synthetically from quinine is also now available.

Recent studies have shown that quinidine from natural sources contains a variable amount of dihydroquinidine. When obtained from cinchona bark the amount of dihydroquinidine present usually varies from 20% to 30%. When from Remijia bark, quinidine usually contains about 10% of dihydroquinidine. When pure crystalline quinidine is made synthetically it contains no dihydroquinidine.

Dihydroquinidine has considerably more clinical activity than quinidine. However, variations in the amount of dihydroquinidine present in quinidine, from the different sources which have been made official, are considered clinically insignificant.

Among other changes included in the new U. S. P. Sheet Supplement is the return to prewar formulas of such preparations as Camphorated Opium Tincture, Compound Gentian Tincture and Wild Cherry Syrup.

PHARMACIST RECEIVES SELECTIVE SERVICE MEDAL AT WHITE HOUSE

A. PH. A. member John H. Hoagland of New Brunswick, N. J., received a medal from President Truman at White House ceremonies honoring the wartime service of volunteer members of the Selective Service System. Mr. Hoagland was one of 54 persons thus honored who had been selected by lot from among those serving five years or more.

Many other pharmacists, through local ceremonies, received the medal, which was awarded to some 100,000 Selective Service workers throughout the country who had participated without compensation for two or more years.

BRIGGS TO DIRECT V. A. PHARMACY

DEAN OF GEORGE WASHINGTON
UNIVERSITY PHARMACY SCHOOL
APPOINTED CHIEF PHARMACIST
OF VETERANS ADMINISTRATION

DEAN W. PAUL BRIGGS, faculty member of the George Washington University School of Pharmacy since 1927, has been appointed chief pharmacist of the Veterans' Administration.

The post is a newly created one authorized by legislation establishing a Department of Medicine and Surgery in the Veterans' Administration. The new law also prescribes qualifications for appointment of pharmacists in the Veterans Administration.

Mr. Briggs indicated that he had not had the opportunity to study fully his new responsibilities. He emphasized, however, that he had had full assurance from Maj. Gen. Paul R. Hawley, Surgeon General of the Veterans' Administration, Department of Medicine and Surgery, and from Col. Hugo Mella, chief of the Professional Division of the Department, that he would have their complete support in efforts to develop pharmaceutical services in Veterans' hospitals.

At a very early date, Mr. Briggs will visit some Veterans' Administration hospitals to obtain firsthand information on present services, looking toward prompt action, if indicated, to improve professional facilities and personnel. Later he plans an extensive survey of all Veterans' facilities to discuss pharmacy problems with hospital managers and pharmacists.

Advancement in the salary scale for Veterans' Administration pharmacists to help assure fully competent personnel will be one of his first objectives, Mr. Briggs stated. He indicated that he did not contemplate any action with respect to presently engaged pharmacists who had qualified under previous standards if their professional services are satisfactory. He particularly emphasized this last point, indicating that while current requirements demand a B.S. degree as a basic qualification for appointment, he was confident that many men with lower collegiate qualifications were rendering a fine service, and these men should be retained.

Mr. Briggs said that he is interested in learning the number of pharmacists in Veterans' hospitals who are members of the AMERICAN

PHARMACEUTICAL ASSOCIATION and of their state pharmaceutical associations. He is also interested in the professional equipment and library facilities available. He said that he assumed at least one licensed pharmacist was attached to each Veterans' Administration hospital, and that full active registration would be mandatory for all Veterans' Administration pharmacists.

Some vacancies for pharmacists now exist, he pointed out, and efforts will be directed toward procuring high-type professional men for these posts. With the new professional standards and the possibility of a higher salary range, he felt sure that the opportunities would attract the men needed.

Qualified pharmacists who are interested in such a position should contact the Veterans' Administration, Department of Medicine and Surgery, Washington 25, D. C.

Dean Briggs brings to the post of chief pharmacist wide experience in pharmacy and administrative work. He has been a licensed pharmacist since 1924 and holds the B.S. degree from George Washington University and the M.S. degree from the University of Maryland.



W. PAUL BRIGGS

Mr. Briggs is treasurer of the U. S. Pharmacopœial Convention.

A member of the AMERICAN PHARMACEUTICAL ASSOCIATION for many years, he is a past chairman of the Practical Pharmacy Section and has presented a number of papers and articles at various pharmaceutical meetings. For two decades he has been a member of the District of Columbia Pharmaceutical Association, serving as secretary for some years and as a member of the executive committee.

During the war Mr. Briggs served in the Navy, being released to inactive duty on December 15, 1945, in the rank of Commander. For two and a half years he was attached to the Bureau of Medicine and Surgery. He was officer-in-charge of recruiting enlisted personnel in the Medical Department and the development and administration of the educational and training program for the Hospital Corps. Comdr. Briggs later organized the Hospital Corps WAVE recruiting, selection and training program.

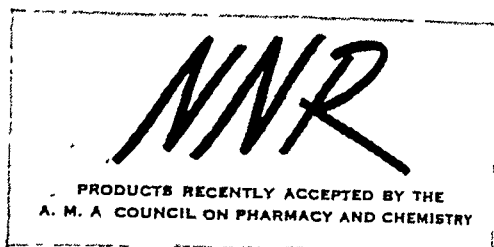
During the last year before his release, he was attached to the Naval Medical Supply Depot in Brooklyn. His work there included the development, jointly with Army officers, of the overall administrative plan for the now-functioning Army-Navy Medical Procurement Agency. During the last six months before V-J Day, Comdr. Briggs was assigned the responsibility of obtaining critically needed medical supplies.

For his services in developing the educational and training program in the Hospital Corps he was awarded the Secretary of the Navy's Citation. In September of last year he returned to George Washington University as dean of the School of Pharmacy.

Although expressing awareness of the problems of his assignment as chief pharmacist of the Veterans' Administration, Mr. Briggs is certain that, with the support he has been assured, real progress can be made in improving pharmaceutical services and the status of Veterans' Administration pharmacists.

A.S.H.P. ELECTS VICE-CHAIRMAN

Mrs. Anna D. Thiel, chief pharmacist of Jackson Hospital in Miami, Fla., has been named vice-chairman of the American Society of Hospital Pharmacists by the organization's executive committee. Mrs. Thiel was chosen to fill the unexpired term of Miss Hazel E. Landeen, who resigned during 1945.



Council descriptions of drug products are published regularly in This Journal as they are accepted. Rules upon which the Council bases its action appeared in the November, 1945, issue (6:329, 1945) and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago 10

CONTRACEPTIVE JELLIES AND CREAMS (See New and Nonofficial Remedies, 1945, p 355)

The following article has now been accepted.

EATON LABORATORIES, INC., NORWICH, N. Y.

Lorophyn Jelly: A water soluble jelly formed from tragacanth and purified Irish moss, having a pH of 7.5, prepared from the formula:

	Per Cent
Phenylmercuric acetate	0.05
Polyethylene glycol of mono iso octyl phenyl ether	0.3
Gum tragacanth	1.8
Purified Irish moss	2.0
Glycerin	8.0
Methyl p-hydroxy benzoate	0.05
Sodium borate U S P	3.0
Water	84.8

Actions and Uses.—See article Contraceptive Jellies and Creams

Dosage—5 cc.

SYRINGE APPLICATORS FOR CONTRACEPTIVE JELLIES AND CREAMS (See New and Nonofficial Remedies, 1945, p 357).

The following article has now been accepted:

EATON LABORATORIES, INC., NORWICH, N. Y.

Lorophyn Jelly Applicator: A transparent plastic syringe threaded at the blunt, intravaginal end, to screw onto the tubes of jelly, to permit filling by compression of the tube. The full capacity is 5 cc., the recommended dose.

HEXAVITAMIN (See J. Am. Med. Assoc., Aug 11, 1945, p. 1099).

The following dosage form has been accepted:

THE WM. S. MERRELL CO., CINCINNATI

Tablets Hexavitamin: Each tablet contains 2500 U. S. P. units of vitamin A, 200 U. S. P. units of vitamin D, 1 mg. of thiamine hydrochloride, 15 mg. of riboflavin, 37 mg. of ascorbic acid and 10 mg. of nicotinamide

DIETHYLSTILBESTROL (See New and Nonofficial Remedies, 1945, p 428).

The following dosage forms have been accepted:

BRISTOL LABORATORIES, SYRACUSE, NEW YORK

Diethylstilbestrol (in Sesame Oil): 0.2 mg. per cc.; 0.5 mg. per cc.; 1.0 mg. per cc.; 2.0 mg. per cc. and 5.0 mg. per cc.: 1 cc. ampuls and 30 cc. vials. Preserved with 0.005 Gm. chlorobutanol.

CONTRACEPTIVE JELLIES AND CREAMS

(See New and Nonofficial Remedies, 1945, p. 355).

The following articles have been accepted:

DUREX PRODUCTS, INC., NEW YORK

Lactikol Creme: A water dispersible nonfatty stearic acid and glyceryl monostearate cream, having a pH of 4.9, prepared from the formula:

	Per Cent
Stearic acid.	15.00
Glyceryl monostearate	7.50
Glycerin.	8.00
Glyceryl monoricinoleate	1.50
Sodium lauryl sulfate	0.50
Lactic acid	0.50
Perfume	0.07
Water sufficient to make	100.00

Actions and Uses—(See article Contraceptive Jellies and Creams.)

Dosage—5 cc.

Lactikol Jelly: A water soluble jelly formed from tragacanth, karaya and acacia, having a pH of 4.15, prepared from the formula:

	Per Cent
Tragacanth	2.70
Karaya	1.00
Acacia	1.00
Lactic acid	1.50
Glycerin	16.00
	1.00
	0.20
Butyl ester of parahydroxy benzoic acid	0.02
Oxyquinolin sulfate	0.05
Perfume.	0.04
Water sufficient to make	100.00

Actions and Uses—(See article Contraceptive Jellies and Creams)

Dosage—5 cc.

SYRINGE APPLICATORS FOR CONTRACEPTIVE JELLIES AND CREAMS (See New and Nonofficial Remedies, 1945, p. 357)

The following articles have been accepted:

DUREX PRODUCTS, INC., NEW YORK

Lactikol Plunger Applicator: A transparent plastic tube threaded at the blunt intravaginal end to screw onto the tubes of Lactikol Creme and Jelly to permit filling by compression of the tube. The full capacity is 5 cc., the recommended dose.

Lactikol Metri-Dose Applicator: A transparent glass tube graduated to permit delivery of from 5 to 8 cc., slightly constricted at the intravaginal end to permit filling, and fitted at the distal end with a rubber compression bulb with central wire spring device to permit adjustment of the volume of jelly or cream to be delivered.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 610).

The following additional dosage form has been accepted:

SCHIEFFELIN & Co, NEW YORK

Tablets Thiamine Hydrochloride: 3 mg.

ASCORBIC ACID (See New and Nonofficial Remedies, 1945, p. 622).

The following additional dosage form has been accepted:

SCHIEFFELIN & Co, NEW YORK

Tablets Ascorbic Acid: 100 mg.

HEXESTROL (See New and Nonofficial Remedies, 1945, p. 435).

The following dosage form has been accepted:

ORTHO PRODUCTS, INC., LINDEN, N. J.

Tablets Hexestrol: 1 mg. and 3 mg.

CONTRACEPTIVE JELLIES AND CREAMS

(See New and Nonofficial Remedies, 1945, p. 355).

The following article has now been accepted:

HOLLAND-RANTOS CO, INC, NEW YORK

U. S. trademark 213,756.

Koromex Jelly: A water soluble jelly formed from tragacanth and gum acacia having a pH of 4.6, prepared from the formula:

	Per Cent
Boric acid	2.0
Oxyquinoline benzoate	0.02
Phenylmercuric acetate	0.02
Glycerin	10.0
Gum acacia	0.6
Tragacanth	2.5
Perfume.	0.015
Butyl parahydroxybenzoate as preservative..	0.02
Water	100

Actions and Uses—See article Contraceptive Jellies and Creams.

Dosage—5 cc.

SYRINGE APPLICATORS FOR CONTRACEPTIVE JELLIES AND CREAMS (See New and Nonofficial Remedies, 1945, p. 357).

The following article has been accepted:

HOLLAND-RANTOS CO., INC, NEW YORK

Koromex Vaginal Applicator: A transparent plastic tube threaded at the blunt, intravaginal end, to screw onto tubes of Koromex Jelly to permit filling by compression of the tube. The full capacity is 5 cc., the recommended dose.

ACETARSONE (See New and Nonofficial Remedies, 1945, p. 235).

The following dosage form has been accepted:

ALLEN LABORATORIES, INC, PALMER, MASS.

Allen Brand Tampon with Acetarsone (Stovarsol): A lightly compressed stitched tampon of absorbent cotton, coated with 0.1 Gm. of powdered acetarsone, to which is attached a tablet consisting of acetarsone 32 mg. in a tablet base composed of lactose, dextrose, boric acid and starch with a small quantity of sodium bicarbonate and tartaric acid to aid disintegration.

Actions and Uses—(See article on Acetarsone.)

Dosage.—Intravaginally, one tampon tablet every other day or daily, followed by a mildly acid douche after a third treatment or after a week's treatment, has been reported to give satisfactory results.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 610).

The following dosage form has been accepted:

FREDERICK STEARNS & CO., DETROIT

Tablets Thiamine Hydrochloride: 3 mg.

Typical Days

FROM THE SECRETARY'S JANUARY DIARY

—2nd—

The long week end and New Year's holiday were good for some, and not so good for others. The desire to start the New Year with a clean slate is difficult to achieve, for there is much still undone from the year that closed with the calendar for 1945. At any rate, 1946 starts off at A. PH. A. headquarters with the staff fully realizing that much is expected of it.

—3rd—

All the day at routine tasks. In the evening at the Hay-Adams discussing the trend of affairs in professions engaged in providing medical care with a congenial group representing producers as well as consumers of medical services, at dinner and far into the night.

—4th—

A great day for Gen. Bradley and Gen. Hawley of the Veterans' Administration, for the President signed the bill to reorganize the Medical Department of the Veterans' Administration. Incidentally also a great day for pharmacy because the Congress of the United States and the President have now declared that graduation from a four-year course in pharmacy shall be the minimum requirement for admission to the position of pharmacist in the Veterans' Administration.

During the day came Dean Briggs of George Washington University, recently returned from Navy service with the rank of Commander, discussing many things including the education of pharmacists for their new responsibilities. A part of the afternoon given over to a review of a lengthy dissertation of the place of women in various professions, including pharmacy, with Mrs. Zapoleon of the Women's Bureau of the Department of Labor.

After dinner and late into the night talking to that inanimate object, commonly known as Dictaphone,

which records what is said with unerring accuracy much to the delight of the secretaries who sometime get tired of being told that what has been transcribed by them is not what was dictated.

—5th—

On this "off day" working with Dr. Powers and the staff on the final proofs of the Proceeding issue of the JOURNAL which contains the reports of officers and committees. Late in the afternoon to Red Bank for some rest over the week end.

—6th—

A part of this Sunday given over to the meeting of the Board of Trustees of the New Jersey Pharmaceutical Association with many an intricate problem to be solved.

—7th—

Early in the morning to Newark, N. J., for a necessary visit to the dentist who practices his profession in the manner one likes to record in the books, and then to call on old friends at the Maltbie Chemical Company, not very far away. Here J. H. Foy, board chairman, though past the three score and ten, functions with customary skill and acumen, ably supported by President Fosbinder and numerous associates including W. J. Burke and P. J. Blakeslee.

Then on to New York and telephoned Bob Swain who is just recovering from a siege of illness. Later to meet Hugo Schaefer at the Chemists Club to discuss A. PH. A. finances, and then to the Advertising Club where an attentive group of Whelan pharmacists seemed eager to absorb the latest developments in pharmaceutical administration and procedures.

—8th—

To Trenton, N. J., for the monthly meeting of the State Board of Health and then by rail to Washington where it was still possible to catch up with the day's mail by way of the dictaphone.

—9th—

An almost continuous session of telephone conversations with the Army, the Public Health Service the Navy, the Veterans' Administration, and some Congressmen involving a wide variety of topics.

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ranging from the proper collection and distribution of whole blood and blood plasma, to a better "break" for pharmacists in the Army, and our thoughts traveled back to the days around 1916-19 when as secretary of the National Pharmaceutical Service Association we worked with J. C. Peacock, treasurer, and the late George M. Beringer, president, for the establishment of a Pharmacy Corps in the Army. World War I was the principal stimulating factor for this activity. It is curious how some present-day writers on pharmacy pass lightly over the record.

To dinner at the Washington Hotel with George Bender who is writing some pamphlets for the Department of Commerce and needs statistical data of which we have a few samples amassed for the New Jersey Board of Pharmacy and for the Committee on the Cost of Medical Care.

—10th—

After the morning routine, a pleasant luncheon meeting at the Watergate with Lt. Col. Nelson and Maj. Wilson of the Pharmacy Corps. Later to confer with Stephens Rippey and John McPherrin of *Drug Topics* and *American Druggist*, respectively; also a conference with Captain Deibert, just out of the Army, who has a background of public health and legal experience that may prove valuable for work we need to have done at the headquarters building.

—11th—

A morning appointment at the Pentagon with Gen. Bliss, Assistant Surgeon General of the Army, followed by a quick lunch and conferences on the present status of streptomycin, alleged shortages of penicillin, and some discussion of the activities of the "Friends of Historical Pharmacy" with Dr. Deno who is here to catch up on some National Formulary work. Later to dinner with Dr. and Mrs. Justin Powers and Dr. Deno, enjoying every minute in such good company.

—13th—

Following the weekly program of the Salt Lake City Choir which comes over WABC there came a program headed International Call with the theme, "an apple a day." It turned out to be a most interesting recital of the average citizen's problem to obtain adequate medical care, and it was well done because it gave both sides of the picture dramatically and impartially. At dusk waiting for a half hour in the bitter cold for the train to Washington which arrived late, as usual.

—14th—

And now came the letter from President Mitchell of the U. S. Civil Service Commission ending lengthy correspondence with a complete reversal of the Commission's earlier position that formal training was not a necessary qualification for pharmacists in government service. Reversal of the Commission's untenable position was greatly aided by Congressional action providing that pharmacists entering the service of the Veterans' Administration must be four-year course graduates.

In the afternoon attending a special meeting of

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representatives of various organizations holding membership in the American Council on Education for the purpose of discussing the program of the annual meeting of the Council to be held in Chicago in May. To dinner at the Washington Hotel Roof with Edward B. Carter, old-time friend and executive of the Abbott Laboratories, with profitable discussion of problems of mutual interest and then another session with the dictaphone before embarking on the 10:45 p. m. train bound for Chapel Hill, N. C.

—15th—

Arriving at Greensboro at 7 a. m. in time to vacate the sleeper and pass on to the cars which land at Durham where active and efficient State Association Secretary Wm. J. Smith and most capable Secretary I. T. Reamer of the American Society of Hospital Pharmacists met us. With Mr. Smith at the wheel of the family car and in the pleasant company of Mrs. Smith the trip to Chapel Hill seemed short indeed. Now a visit to the College of Pharmacy of the University of North Carolina including stops at the offices of Prof. Burlage, the North Carolina Pharmaceutical Association and the Board of Pharmacy all located in the College building. Luncheon with the N. C. Ph. A. Executive Committee at the Carolina Inn which offered the very enjoyable opportunity of listening and talking to these earnest men who guide the destinies of pharmacy in North Carolina. Fortunate indeed are North Carolina pharmacists in their selection of executive personnel.

Then to Durham by automobile with Assistant Dean Jacobs and Board of Pharmacy Secretary McAllister where a visit to the Duke University Medical Center proved most educational and enjoyable. A brief period spent with Dean Davison of the College of Medicine whose dynamic leadership has been a boon to medical service in this part of the South. There followed an interview with representatives of the press who did an excellent job in broadcasting both preliminary and supplementary notices of the dinner given by the North Carolina Pharmaceutical Association to the faculty and students of the College of Pharmacy that night.

On the return trip to Chapel Hill glad to see Dean Beard at his home where he was recovering from recent illness, and found him, as ever, enthusiastic about the prospects of pharmacy, although somewhat pessimistic about what is happening in some places. He need not be pessimistic about pharmacy in North Carolina for it seems to be in excellent hands and benefiting from his long-range planning. At dinner that evening in the Carolina Inn saw one

of the finest groups of pharmacy students it has been our pleasure to meet in a long time and they listened attentively to a message about the direction in which pharmacy is headed in these United States. Then for a pleasant automobile trip to Raleigh with President-Elect Daniels. Catching the Silver Meteor for Washington at 11:50 p. m., considering the day well spent but with some misgivings about having to alight in Washington at 6:05 a. m.

—16th—

For five long years never traveled on a train arriving in any city on time in the morning. But today, with the train due to arrive at 6:05 a. m. it was on time and so there was no alternative but to tumble out of bed at 5:30 a. m. and reached the office in time to open the place for the earliest of early birds. After catching up with the accumulated mail, a staff luncheon to discuss the North Carolina trip, and it was a pleasure to report what we had seen and heard and how well pharmacy seems to be progressing in that progressive state, thanks to the fine cooperation of leaders in the State Association, the College of Pharmacy and the Board of Pharmacy.

—18th—

After an hour or two at the desk, a quick trip to Baltimore for a meeting with Beal, Dunning, Swain and Little, to discuss important A. Ph. A. business, and then to the annual meeting of the American Council on Pharmaceutical Education at the U. of Maryland College of Pharmacy. A busy afternoon discussing current educational problems and transacting the business of the Council, following which there was a good dinner at the Lord Baltimore Hotel, and then talking late and long with Costello and Christensen about plans for the annual convention of the A. Ph. A., A. A. C. P. and N. A. B. P.

—19th—

All of the morning at the University of Maryland College of Pharmacy discussing standards of pharmaceutical education and the trend of the times and what to do about it all. Then for a brief session with the auditors of A. Ph. A. accounts and continuation of discussions bearing on the problems of pharmacy with Little, Christensen, Costello and DuMez over the lunch table at the Lord Baltimore Hotel. In the middle of the afternoon returning to Washington with time enough left to spend several hours at the desk.

—22nd—

All day at the desk working on pamphlets and reports to complete various assignments from a variety of sources. Also discussions with the staff and others on necessary changes in our equipment

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—23rd—

In the middle of the morning came Maj. Einbeck, Dr. DuMez and George Frates for conferences on the Army situation with respect to the threatened use of the Pharmacy Corps for commissioning non-pharmacists. There followed a visit to Congressman Durham, who pressed the buttons which brought responses from responsible sources, and then to the Pentagon for a conference with Gen. Bliss of the Surgeon General's office, and Gen. Paul of Gen. Eisenhower's staff. It looks as if the plot to sabotage the Pharmacy Corps may yet be unsuccessful. At dinner with Roy Koch at the Willard exchanging views on present policies for controlling streptomycin.

—24th—

An all-day session with Dr. B. V. Christensen on Council activities and convention programs. At lunch at the Statler with Drs. Christensen and Newcomb reviewing problems before the American Foundation for Pharmaceutical Education, and the part which the A. Ph. A. can play in their solution.

—25th—

On the way back to Washington from New Jersey stopped off to attend the annual meeting of the

Joint Committee on Professional Relations of the Medical Society of New Jersey and the New Jersey Pharmaceutical Association. It is a joy to note the lasting friendly relation which has been worked up between these organizations over a period of ten years. Not only has this joint group produced the New Jersey Formulary, now in its fourth edition, but it has cemented ties of friendship and mutual cooperation between the two professions in New Jersey which are rare indeed in the annals of medicine and pharmacy.

Thanks for this happy relationship must go in large measure to Dr. Chester I. Ulmer of Gibbstown, N. J., who first became acquainted with pharmacy as an apprentice with the late A. Ph. A. President L. L. Walton of Williamsport, Pa. A new development emanating from this group is the endorsement of a proposed New Jersey Formulary Research Foundation at Rutgers University, with the initial contribution of \$1000 being split between the Medical Society and the Pharmaceutical Association. This is real cooperation. Glad to relinquish the editorship of the New Jersey Formulary to Tom Rowe, at the New Jersey College of Pharmacy.

Ph. A.



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VOL. VII, NO. 4

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CONSECUTIVE NO. 7

Practical Pharmacy Edition

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WHERE IS STREPTOMYCIN?

ALTHOUGH long heralded by the public press, streptomycin remains a promise of the future for pharmacists and most

physicians. General distribution is probably many months away. The facts are that production facilities are still in the construction stage, and the scope and proper methods of streptomycin treatment are largely unknown.

Rapid developments can now be expected for this reason: Eleven pharmaceutical and chemical manufacturers are contributing more than a half million dollars to the National Research Council for a program of clinical studies to be administered by Dr. Chester S. Keefer, who did such an excellent job of the same type on penicillin. This should produce the greatest amount of clinical data in the shortest time with the expenditure of a minimum amount of material.

By this cooperative venture—and by sinking some \$20,000,000 into production facilities for a drug that remains enigmatic profitwise—manufacturing pharmacists and chemists show a public-spirited interest in expediting therapeutic progress. That their investment may pay off later does not detract from the fact that these firms have the foresight and progressiveness to join in this first privately financed, nationally coordinated clinical evaluation in our history.

In the case of the penicillin program, finances and facilities were available through the Office of Scientific Research and Development, a wartime government agency about to be liquidated. In the case of streptomycin the way was open for in-coordinated and overlapping clinical trials which surely would have prolonged the period of evaluation and would have led to sporadic and erratic distribution.

Despite past rumors, events have borne out our belief that penicillin products went to the retail pharmacist and community physician just as soon as they were evaluated and supplies seemed reasonably adequate. There is reason to believe that this same policy will be followed for streptomycin.

For the present, 37% of the available streptomycin has been allocated by the Civilian Production Administration (order M300-119) to civilian

clinical research under Dr. Keefer. The remaining 63% will go to the Army, Navy, U. S. Public Health Service and Veterans' Administration. Total streptomycin production for March was about 27,000 Gm.

During the coming months many pharmacists will be receiving inquiries from patients and from their physicians regarding streptomycin. It should be clearly understood that the drug is not available from producers or government agencies. Inquirers should be advised that:

1. Streptomycin is available only for clinical trial until further notice.

2. All requests for the drug must be made of Dr. Chester S. Keefer, Evans Memorial Hospital, Boston, Mass. (telephone: Kenmore 9200).

3. Requests are to be submitted only by physicians, who should supply complete clinical data on their cases when applying and be willing to submit adequate records on the results of treatment.

4. Appeals for streptomycin should be restricted to infections that are not susceptible to the action of sulfonamides, penicillin or other therapeutic agents.

When sufficient clinical evidence has accumulated, Dr. Keefer will bring in a report on indications, contraindications, methods of administration and dosage. There is evidence that this new antibiotic will emerge as a prescription drug of major importance. Nevertheless, its therapeutic range of effectiveness will undoubtedly be far less than that of penicillin, and there have been disconcerting indications that drug fastness will constitute a problem.

STREPTOMYCIN PRODUCERS

Producers of streptomycin, constituting the Streptomycin Producers Advisory Committee of the Civilian Production Administration, who contributed in equal shares to the program of clinical evaluation:

ABBOTT LABORATORIES
COMMERCIAL SOLVENTS CORPORATION
CHARLES PFIZER & CO., INC.
E. R. SQUIBB & SONS
ELI LILLY & CO.
HEYDEN CHEMICAL CORPORATION
MERCK & CO., INC.
PARKE, DAVIS & CO.
SCHENLEY LABORATORIES, INC.
THE UPJOHN CO.
WYETH, INC.

Sirs:

What is parachlorophenol and where may I obtain a supply?

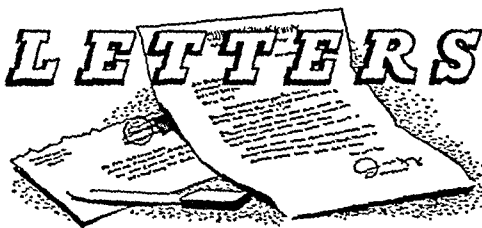
Can I purchase reprints of articles in the JOURNAL for distribution to physicians? I find both editions of the JOURNAL extremely useful in keeping up with things in pharmacy.

Baltimore, Md.

WILLIAM M. GOULD

Parachlorophenol is a disinfectant available from the Dow Chemical Co., Midland, Mich., the Monsanto Chemical Co., 1700 S. 2nd St., St. Louis 4 or Eastman Kodak Co., Rochester 4, N. Y. See page 160 for a new use of this chemical in conjunction with penicillin.

Reprints of JOURNAL papers are often available either from the author or editorial office. Quantity orders which require a special printing must be received promptly after publication before the type is distributed. When reprints are unavailable some readers purchase a few extra copies of the JOURNAL.—THE EDITOR.



PHARMACIST'S BASIC BOOKSHELF DISCUSSED

Sirs:

Being at home convalescing from a heart attack, I had plenty of time to digest the excellent article on a well-balanced basic library in the February issue. I pride myself on being one of the few bibliophiles in pharmacy, with one of the largest privately owned pharmaceutical libraries in the U. S. including books in many languages. To my great surprise and sorrow I find two kinds of books not mentioned in your basic list: pharmaceutical history and synonyms.

What books have I to suggest? In history, which should be represented in every pharmaceutical library, four outstanding volumes are *Geschichte der Pharmazie* by H. Schelenz (a master work but out of print, I believe), *Chronicles of Pharmacy* by Wootton, *Four Thousand Years of Pharmacy* by LaWall, and last but not least, *History of Pharmacy* by Kremers and Urdang.

The best single volume on synonyms, which we use so often it is coming apart, is *Manual International Pharmacy* by A. Graa. One may readily find synonyms for a given drug title in Latin, English, German, French or Italian. . . . Graa was a well-educated, Swiss-born pharmacist, living in New York City, who mastered all 5 languages. The book was his life work. When he discovered how few pharmacists would buy it at \$4 he became thoroughly disgusted and returned to Switzerland. The surplus printed pages were sold as old paper. Consequently the book is unobtainable today.

During my European tour in 1926, when I helped found the *Gesellschaft fuer Geschichte der Pharmazie*, I was fortunate to locate Graa in Basel and had him as my guest at the hotel. He still had a grudge against pharmacy in the United States. . . .

Permit me to point out the routine followed in my two establishments when we get a prescription or a call for a formula, drug or herb with which we are not familiar. . . . The following books are consulted in rotation: (a) U. S. P., (b) N. F., (c) A. Ph. A. Pharmaceutical Recipe Book, (d) U. S. Dispensatory; then if necessary we go to some special book.

In the case of a German, French or Italian title we consult Graa; Spanish or Portuguese — *Memorandum Synonimias*, which one of my friends sent me from Madrid; French formulas—*Dorvault L'Officine*; Italian—*Orosi Farmacologica*; British—*Pharmaceutical Codex* and

Extra Pharmacopoeia; German and also other continental formulas—*Hager's Pharmazeutische Praxis*. . . .

Brooklyn, N. Y.

OTTO RAUBENHEIMER

Sirs:

The recent article, "A Well-Balanced Basic Library," should provoke some of us who have been out of college for quite a while—twenty years in my case—to check up on our library to see if we are letting things slip a bit.

While my prescription practice is not large I like to give it the best I can, so please send me the enclosed list of books.

Phelps, N. Y.

W. J. WHITSON

Sirs:

The suggestions for the pharmacist's basic bookshelf in the February issue of the PRACTICAL PHARMACY EDITION were very inclusive except for dentistry. One of the musts that should have been included is *Accepted Dental Remedies*. A general textbook on dental pharmacology and therapeutics would also be useful.

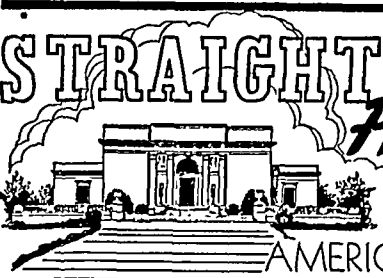
. . . A better comprehension of dentistry and dental needs would make for a better understanding between our two health professions.

University of Maryland
Dental School

EDWARD C. DOBBS

Dr. Dobbs' point is well taken. Accepted Dental Remedies (\$1.50) is published annually by the American Dental Association, 222 E. Superior St., Chicago 11. Also to be recommended is Pharmacology and Dental Therapeutics (\$6.50) by Prinz, Rickert and Dobbs; C. V. Mosby Co., St. Louis; or A Textbook of Dental Pharmacology, Materia Medica and Pharmacotherapy (\$5) by McGehee and Green; Blakiston Co., Philadelphia.—THE EDITOR

STRAIGHT FROM HEADQUARTERS



by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

EVER since public attention has been focused on the inability of certain groups within the population of the United States to obtain all of the benefits of modern medical care at a cost to them which they can readily afford, various proposals have been made to remedy the situation.

Perhaps the most far reaching of the early researches in this field was the five-year program of the Committee on the Costs of Medical Care. Its final report published in 1932, together with the many thorough-going studies which furnished the basis for the conclusions of the Committee, impressed the nation with the social and economic aspects of the medical care problem and stimulated widespread interest in finding a solution.

Every student of the subject has followed with interest the conflicting claims of producers and consumers of medical care and it was to be expected that debate on the subject would lead to a variety of charges and countercharges, as well as constructive proposals for meeting the situation.

The war developed new aspects of the problems of medical care and emphasized in various ways many existing deficiencies in the health of men and women which could be corrected by adequate and readily available preventive and curative measures. War medicine for both the armed forces and civilians brought into bold relief the possibilities of mass care and preventive measures and emphasized the extent to which pooling of our knowledge, skill, information and resources can improve health and make available the safeguards against sickness.

The American Medical Association has been gathering data for many years on the basis of which a sound program of prepayment for medical care could be evolved. Welfare organizations and individuals deeply interested in social progress have suggested procedures which have been termed socialistic by the more conservative segments of our population and by a majority of the organized medical profession. On the one hand, legislative proposals have been fostered, such as the Wagner-Murray-Dingell Bill which is typical of the method of solution recommended by some

public health officials and welfare workers.

On the other hand, the medical profession, through its state and national associations, has been sparring for time by interposing objections at every stage of any process designed to place payment for medical care on anything approaching a compulsory insurance basis. In recent years the profession has been repeatedly reminded of the necessity of meeting the public outcry against alleged too high costs of medical care with a positive program, and such a program has been in the making for a number of years.

The success that has attended the Blue Cross prepayment plans for hospitalization has definitely stimulated the demand for complete sickness insurance. Many of these plans have already added laboratory service, X-ray and other diagnostic tests, and in some instances payment for surgical operations and special treatment.

It is plain, of course, that the physician is the central figure in any plan of medical care. Therefore, all plans to provide for more complete utilization of medical facilities for more people stress the importance of securing the approval and agreement of the medical profession to participate on a basis which appeals to the profession. From time to time there have been announcements, both from the profession and from lay groups, with respect to principles that should be followed in providing adequate and maximum health care.

The American Medical Association has finally issued its own national health program which relies on the nation-wide organization of locally administered prepayment medical plans sponsored by medical societies.

The Council on Medical Service of the American Medical Association has established a standard of acceptance for medical care plans and has laid down several provisos under which such plans may qualify for acceptance and carry the seal of approval of the Association. These provisos include (1) approval by a state or county medical society in the area in which the plan operates; (2) assumption by the medical profession of responsibility for the medical services included in

the benefits; (3) free choice of a qualified doctor of medicine and maintenance of the personal confidential relationship between patient and physician; (4) organization and operation of the plan to provide the greatest possible benefits in medical care to the subscriber.

To further these plans, an independent association known as "Associated Medical Care Plans, Inc.," has been organized and will include as members all plans that meet the minimum standards of the Council on Medical Service of the American Medical Association. Through this organization it is expected to provide coordination and reciprocity among the various plans to permit transference of subscribers from one plan to another and use of the benefits in any state.

The American Medical Association has also established a Division of Prepayment Medical Care Plans within its own organization with a director and staff who will administer the activities related to the promotion and development of medical care plans in all states.

A. M. A. Ten Point Plan

At a recent meeting of the House of Delegates of the American Medical Association, a statement of ten principles to solve the national health problem was adopted. These ten principles may be summarized as follows:

1. There should be individual responsibility for a minimum standard of nutrition, housing, clothing and recreation as fundamental to good health, but the application of community effort compatible with free enterprise should be encouraged, with governmental aid where needed.

2. The provision of preventive medical services through health departments is recognized as essential, but there should be local control over funds received from the Federal government for that purpose. Care of the sick as a function of health departments is, however, disapproved.

3. Maternal and prenatal care should be made available to all at a price they can afford to pay and when local funds are lacking for the care of those unable to pay, federal aid should be supplied but administered through local or state agencies.

4. Child health care should be supplied by the individual physician but may be provided through child care and infant welfare stations, administered under local auspices with support by tax funds whenever the need can be shown.

5. Health and diagnostic centers and hospitals are recognized as essentials of good medical care and the provisions of the Hill-Burton bill for such facilities with Federal aid are approved.

6. Private hospitalization insurance such as the Blue Cross plans and voluntary nonprofit prepayment plans for medical care are approved.

7. Veterans' medical care, preferably by a physician of the veterans' choice, with payment by the Veterans' Administration is endorsed on a basis of mutual agreement between state medical associations and the Veterans' Administration.

8. Research for the advancement of medical science with inclusion of medical research in a national science foundation sponsored by the Federal government is endorsed.

9. The services rendered by volunteer philanthropic health agencies and their participation in a national health program is encouraged.

10. Health education is recognized as fundamental to the promotion of the public health and alleviation of illness and is considered a necessary function of all departments of public health, medical associations and school authorities.

Thus, under the stress of the times and the revolution in national and international attitudes toward health and medical care as inherent rights of the individual, organized American medicine takes on new responsibilities. It agrees that complete medical care is not alone for the wealthy and the indigent, but also for the medically indigent and the low income groups whose means do not extend to the ability to meet the financial obligations of catastrophic illnesses without some organized form of preparation.

The familiar family doctor, easy-going as far as collections for his services are concerned, takes on a more businesslike attitude through his county, state and national associations, for they have agreed that making it possible for each patient to pay is better than charging the rich to compensate for services to the poor.

It is clear from popular discussions of the subject and the various opinion polls that the people of the United States believe the insurance principle applied to the more expensive medical services offers a sounder approach to a national health program than to saddle the medical profession alone with both the problem of providing good medical service and collecting the bill.

Other professions engaged in supplying medical services and supplies have been sympathetic with the views of organized medicine on this problem and are of course vitally interested in the program that is now evolving. Pharmacy is vitally interested in the trends and while it is not at the point of initiating any program of medical care it will always support the central figure—the doctor of medicine—in his efforts to maintain all medical services on a high, independent and altruistic level.

ACETARSONE

CARBARSONE

ODOCHLOROXYQUINOLINE

SECOND IN A SERIES ON DRUGS
NEWLY ADMITTED TO N. F. VIII

by MELVIN W. GREEN

AMEBIASIS—invasion by the organism *Endameba histolytica*—occurs far more frequently than previously appreciated. Formerly there was a tendency to recognize only the most severe, acute attacks. These are accompanied by dysentery and are spoken of as amebic dysentery. Failure to recognize the more subtle forms of the disease brought failure to visualize its widespread character.

Craig,¹ in 1932, pointed out that 5 to 10% of the people in the United States at least harbor the disease. A complement-binding substance actually develops in the blood of these carriers, indicating some degree of tissue injury. The carriers constitute a genuine public health menace, especially among food handlers, as so well shown during the outbreak at the Chicago fair.

Historically, emetine has been considered for some time as the leading specific for amebiasis. Although emetine rapidly controls the symptoms of severe intestinal amebiasis, it is now thought to be the least active drug for actually curing the disease. Brown² claims that it is only about 50% effective and that there are many very undesirable side-effects leading particularly to peripheral neuritis and cardiovascular disturbances.

The moderate and limited usefulness of this drug led to the introduction of other drugs, notably acetarsone, carbarsone, and iodochloro-hydroxyquinoline (Vioform).

Acetarsone

Acetarsone was introduced into medicine as stovarsol by Marchoux³ in 1924. Being an arsenical it was also used in the treatment of syphilis. While moderately effective for this purpose and available physiologically upon oral administration, toxicity limits its usefulness as an antisypilitic. As an amebicide it is effective

in ambulatory cases and carriers.

The limitations of acetarsone are essentially those of carbarsone, but its toxicity is somewhat greater. It is generally believed that acetarsone has a therapeutic index about one-eighth that of carbarsone and it also exhibits more side-effects.^{2, 4} Nevertheless, Brown² believes acetarsone to be an ideal complement to emetine—the emetine to control the acute symptoms and the acetarsone to destroy the amebae. No tragedies were observed in 232 cases, but toxic erythema was found in 5.6% of the cases along with an occasional exfoliative dermatitis. It appears that no arsenical should be administered unless the patient is under close observation.

The following table from Brown² is of interest:

DRUG	CURE		FAILURE	
	Cases	%	Cases	%
Emetine	88	55	73	45
Ipecac	11	73	4	27
Arsphenamine	10	91	1	9
Acetarsone	112	85	19	15
Chiniofon	22	82	5	18

Acetarsone has been used also (as a powder containing 12.5% acetarsone in a mixture of equal parts of sodium bicarbonate and kaolin) in the local treatment of vaginal infections from *Trichomonas vaginalis*. In addition it has been used as a paste locally for Vincent's angina.

Standards for acetarsone and acetarsone tablets will be included in N. F. VIII.

Carbarsone

Carbarsone, first prepared by Ehrlich, was introduced as an amebicide by Anderson and Reed⁵ in 1931. It is effective on motile forms of the organisms but is not so rapidly active as emetine. It does not act on amebae in liver ab-

Adapted from the Bulletin of the National Formulary Committee.

scesses, but is active against cysts. Because carbarsone is rapidly absorbed upon oral administration, and rather slowly eliminated by the kidneys, rest periods between courses are needed to prevent cumulative toxic effects.

Deaths from carbarsone are extremely rare according to Epstein,⁶ but mild skin rashes and localized edemas have been reported. Abdominal pains, diarrhea and vomiting may occur.

Most of the principles applying to acetarsone therapy apply also to carbarsone. The usual dose of carbarsone is 0.25 Gm. taken orally twice daily for about ten days, constituting a "course." After rest periods of ten days, this may be repeated several times if necessary. For, acute dysentery, the drug is often given by rectum as a retention enema. In this case, after a cleansing enema, 200 cc. of a warm 1% solution of carbarsone in 2% sodium bicarbonate solution is repeated on alternate nights for 5 enemas.

Carbarsone is recognized by the U. S. P., and the tablets have been admitted to N. F. VIII.

Iodochlorohydroxyquinoline

Iodochlorohydroxyquinoline has been available for many years as Vioform and used as an antiseptic dusting powder in a manner similar to iodoform. It was found to be amebicidal by Anderson and Koch⁷ in 1931. Later, Leake⁸ found that the compound is rapidly excreted in the urine by humans and is very satisfactory against *E. histolytica* when given in capsules to monkeys. In 1933, David, Johnstone, Reed and Leake⁹ made a more detailed clinical analysis of the compound and compared it with chiniofon, which is chemically similar in structure. The following table was prepared by these authors.

BIOL. ACTIVITY	IODOCHLOROHYDROXYQUINOLINE	CHINIOFON
Acute toxicity, oral, guinea pigs	200 mg./Kg. kills 13/20 in 4 days	900 mg./Kg. kills 7/15 in 6 days
In vitro amebicidal activity in 24 hrs.	Sol. HCl compd. 1:10,000	1:500
Balanticidal action in naturally infected guinea pigs	Cured 80% at divided dose of 150 mg./Kg. with 20% mortality	Cured 60% at divided dose of 600 mg./Kg. with 40% mortality
Amebicidal effect in naturally infected macaques	Cured 7/8 at 100 mg./Kg. for 10 days	Cured 2 at 500 mg./Kg. daily for 28 days; killed 2 at 2 Gm. daily for 10 days

These workers found no untoward effects in 57 unselected cases and 38 clinical cures were effected. After six months there were 6 recurrences out of 7 patients. A dose of 0.25 Gm., three times daily for a total of 15 Gm., was suggested with a repetition after a ten-day rest

period. Ambulatory patients can use the drug without interference with their daily routine.

Because iodochlorohydroxyquinoline is not wetted by water, a wetting agent is incorporated into the commercial tablets.

The table on the next page modified from Beckman⁴ summarizes these treatment plans.

One of the most important clinical uses of iodochlorohydroxyquinoline is the treatment of vaginitis, especially when due to infection by *Trichomonas vaginalis*. Allen¹¹ has pointed out that "at least in private practice *Trichomonas vaginalis* vaginitis is more common than gonorrhea." One of the most interesting clinical reports on the usefulness of iodochlorohydroxyquinoline in treating this form of vaginitis is that of Zener.¹² His criterion for cure was that of Adair and Hesselstine,¹³ in which it is indicated that "the patient (without further treatment) has passed two menstrual periods without recurrence of symptoms, and there is no evidence of the disease on clinical appearance or smear."

While ointments containing this drug are effective, a high percentage of recurrences appear. Further, when ointments are used for a long time, a pad must be worn which increases the irritation. It is the opinion of Zener that the recurrences are often due to reinfection from the feces and, consequently, it is recommended that tablets be given orally in conjunction with any local treatment of the vagina.

In studying the pH range of the normal and diseased vagina, Zener found in the normal vagina a range of 4.6 to 7.5, with an average of 6.2. In the vaginitis patients he found a range of 4 to 5.6, with an average of 5. Since the more acute the vaginitis, and the greater the number of organisms the lower the pH, Zener believes that

local treatment should be alkaline. He recommended an insufflation of 1 part iodochlorohydroxyquinoline with 9 parts of magnesium trisilicate, using a total of 50 grs.

On the other hand, there are those who believe that a low pH inhibits the infecting organisms

SEVERAL ALTERNATIVE PLANS FOR THE TREATMENT OF AMEBIASIS WITH SPECIFIC DRUGS

FIRST COURSE OF TREATMENT	SECOND COURSE	THIRD COURSE
	(To begin after ten days' rest)	(After ten days' rest)
Emetine hydrochloride (subcutaneously or intramuscularly). A total dose not to exceed 10 mg. per Kg. Give two-thirds of the total amount in first six days; remaining one-third in second six days. (If not a case of moderate or considerable severity, the emetine may be omitted.)	Bismuth subcarbonate (or subnitrate), 12 Gm. in milk or water three to five times daily.	Bismuth salt may be continued as long as patient can take it.
At the same time give either one of the following:	At the same time either of the following depending upon which plan is being pursued:	
Plan A Carbarsone, 0.25 Gm. twice daily by mouth for ten days.	Iodochlorohydroxyquinoline, 0.5 Gm. twice daily by mouth for ten days. (Or chiniofon, 1 Gm. three times daily by mouth for eight days; or try the chiniofon enemas—see Plan D, 1st course.)	Repeat the carbarsone course by mouth or try the carbarsone enemas.
Plan B Iodochlorohydroxyquinoline, 0.5 Gm. twice daily by mouth for ten days. (Or chiniofon, 1 Gm. three times daily for eight days.)	Carbarsone, 0.25 Gm. twice daily by mouth for ten days. (Or carbarsone enemas—see Plan C, 1st course.)	Repeat either the iodochlorohydroxyquinoline course by mouth or chiniofon enemas.
Plan C Carbarsone, 200 cc. of 1% in 2% sodium bicarbonate solution by rectum, repeating on alternate evenings until at least five enemas have been retained overnight.	Iodochlorohydroxyquinoline, 0.5 Gm. twice daily by mouth for ten days. (Or chiniofon, 1 Gm. three times daily by mouth for eight days; or try the chiniofon enemas—see Plan D, 1st course.)	Repeat carbarsone enemas or try carbarsone by mouth.
Plan D Chiniofon, 300 cc. of 2.5% by rectum, to be retained as long as possible; repeated daily for ten days.	Carbarsone, 0.25 Gm. twice daily by mouth for ten days. (Or carbarsone enemas—see Plan C, 1st course.)	Repeat chiniofon enemas or try chiniofon or iodochlorohydroxyquinoline by mouth.

and promotes a more normal flora. As a reflection of this idea, commercial insufflates and inserts (vaginal tablets) are available containing boric and lactic acids as well as other ingredients.

Zener found that when insufflation was coupled with oral administration in 112 cases, the cures were 100% and there were no recurrences. When the drug was administered only vaginally in 28 patients, there were only 89% cures with 10.7% recurrences. Huffman¹⁵ treated 14 cases with a 6% suspension of the drug in glycerin and got an excellent response. Peterson¹⁴ treated 500 cases with a paste of 15 Gm. of iodochlorohydroxyquinoline in 22 cc. of glycerin and got nearly 100% cures and, in addition, found that 7 cases which were refractory to other forms of treatment responded well to iodochlorohydroxyquinoline.

Iodochlorohydroxyquinoline is recommended in petrolatum for the treatment of many forms of eczema and psoriasis.^{16, 17}

Barkann,¹⁸ in discussing the treatment of pyorrhea, suggests that in caring for infected alveolar pockets, the area should be packed with iodochlorohydroxyquinoline gauze after gentle curet-

tement. The gauze is prepared by mixing the drug with one drop of glycerin to prepare a paste, which is then applied to gauze strips 1/4 inch by 1 1/2 inches. These packings may be left in place for as long as two days and then renewed if necessary.

Both iodochlorohydroxyquinoline and tablets of the drug will be official in N. F. VIII.

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JOURNAL PRESENTS

A. D. A. REPORTS ON DENTAL DRUGS

TO extend its service to readers, THIS JOURNAL has arranged with the Council on Dental Therapeutics of the American Dental Association to present regularly descriptions of products admitted to *Accepted Dental Remedies* and selected Council reports of interest to the pharmaceutical profession.

Since 1930, when the Council on Dental Therapeutics was organized, thousands of dental products have been considered, of which about 600 now stand accepted. Dental drugs, cosmetics, chemical mixtures and devices fall within the scope of the Council's investigations, which are carried out with the cooperation of the Bureau of Chemistry of the American Dental Association.

Although descriptions of accepted products may be based in part on evidence or information supplied by the manufacturer, such data are examined critically and are admitted only when supported by other evidence or when they conform to known facts. The Council and its employees make no charge to commercial firms for work in connection with the evaluation of products.

In the volume *Accepted Dental Remedies*, which is revised annually, pharmacists will find descriptions of all accepted products, together with their properties, actions, uses and dosage. Besides the formulas found in the body of the book, there is a formula and prescribing section designed for dentists "who wish to write prescriptions or to ask their druggist to prepare drug and chemical mixtures especially for them."

Dr. Donald A. Wallace, secretary of the Council on Dental Therapeutics, points out that "the Council encourages the writing of prescriptions, especially for sedatives and antiseptics. Dentists are also urged to develop a cooperative relationship with a local pharmacy, and to utilize the skill of pharmacists in the preparation of chemical mixtures for use in their work in the laboratory and at the chair."

Pharmacists who have added *Accepted Dental Remedies* to their reference shelf generally consider it both useful in their practice and helpful in

EVALUATIONS BY THE COUNCIL ON DENTAL THERAPEUTICS, TO APPEAR REGULARLY IN THIS JOURNAL, WILL INCREASE EFFECTIVE COOPERATION BETWEEN PHARMACY AND DENTISTRY

developing more effective cooperation between pharmacy and dentistry. The volume is available at \$1.50 from the Council on Dental Therapeutics, American Dental Association, 222 East Superior St., Chicago 11.

Products accepted between revisions of *Accepted Dental Remedies* are announced in the *Journal of the American Dental Association*, and now will be made available promptly to pharmacists through these pages.

Use of the Council's seal of acceptance, shown in the illustration, is permitted on those products which meet the standards for safety and effectiveness. The Council has formulated a set of ten rules to which products must conform in order to be eligible for acceptance. These rules cover ten pages of fine print,* but may be summarized briefly as follows:



Rule 1.—Products must be of known quantitative composition. The Council does not accept information in confidence.

Rule 2.—Scientific tests, adequate to standardize the product, must be known.

Rule 3.—Only certain classes of products may be advertised to the public, and these only in such a manner

as not to encourage harmful self-treatment.

Rule 4.—Products must be labeled in such a manner as not to encourage harmful self-treatment. Accepted products must not be confused with unaccepted products in advertising or labeling.

Rules 5 and 6.—False or misleading claims for safety or effectiveness will not be permitted.

Rule 7.—Safety limitations of therapeutic,

* *Accepted Dental Remedies*, 11th Edition, pp. 7-17.

prophylactic or diagnostic devices must be stated plainly in printed matter accompanying the device.

Rules 8 and 9.—Names of products must be indicative of their composition where practicable. Exclusive proprietary names are not usually acceptable. Products with misleading names are not accepted.

Rule 10.—Products must be useful and compatible with the best interests of the public and of the dental profession.

The outstanding representatives of the dental profession and the basic sciences listed below are members of the Council on Dental Therapeutics. These men have no financial interest in any commercial enterprise and receive no salary or honoraria from the American Dental Association. The A. D. A. employs a full-time staff of six persons to carry out the details of the Council's program.

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DENTAL REMEDIES

recently accepted by the
COUNCIL ON DENTAL THERAPEUTICS
AMERICAN DENTAL ASSOCIATION

ANESTHETICS—LOCAL¹

Procaine HCl 2%, Epinephrine 1:25,000: Each cubic centimeter is stated to contain procaine hydrochloride, U.S.P., 0.02 Gm.; epinephrine, 0.00004 Gm.; sodium chloride, 0.0045 Gm.; sodium bisulfite, 0.0020 Gm., and distilled water.

Procaine HCl 2%, Epinephrine 1:50,000: Each cubic centimeter is stated to contain procaine hydrochloride, U. S. P., 0.02 Gm.; epinephrine, 0.00002 Gm.; sodium chloride, 0.0045 Gm.; sodium bisulfite, 0.0020 Gm., and distilled water. Marketed in cartridges, 1.8 cc. and 2.4 cc. Manufactured by the Graham Chemical Company, Jamaica, N. Y.

Procaine HCl 2%, Epinephrine 1:25,000.

Procaine HCl 2%, Epinephrine 1:50,000: Composition: See Graham Chemical Company. Distributed by the Ethical Dental Products Company, New York, N. Y.

Procaine HCl 2%, Epinephrine 1:25,000.

Procaine HCl 2%, Epinephrine 1:50,000: Composition: See Graham Chemical Company. Distributed by the Gold Dental Supply Company, Cincinnati, Ohio.

Procaine HCl 2%, Epinephrine 1:30,000: Each cubic centimeter is stated to contain procaine hydrochloride, U. S. P., 0.02 Gm.; epinephrine, 0.000033 Gm.; sodium chloride, 0.0045 Gm.; sodium bisulfite, 0.0020 Gm., and distilled water. Marketed in cartridges, 1.8 cc. and 2.4 cc.

Procaine HCl 2%, Epinephrine 1:50,000: Composition: See Graham Chemical Company. Distributed by the Guterman Dental Supply Company, New York, N. Y.

ZINC OXIDE-EUGENOL CEMENTS²

Zinc Oxide-Rosin-Eugenol Temporary Cement (Anodyne)-Caulk: Powder: Each one hundred grams is stated to contain zinc oxide, 69.65 Gm.; hydrogenated rosin,³ 29.85 Gm.; zinc acetate, 0.5 Gm. Liquid: Each one hundred grams is

¹ Accepted Dental Remedies, Ed. 11, p. 39.

² *ibid.*, Ed. 11, p. 214.

³ *ibid.*, Ed. 8, p. 191.

⁴ *ibid.*, Ed. 11, p. 93.

stated to contain eugenol, 82.1 Gm.; corn oil, 17.9 Gm. Manufactured by the L. D. Caulk Company, Milford, Del

DENTIFRICES*

Varady Tooth Paste: Composition: See Milk-I-Dent Dental Cream. Manufactured by Trade Labs., Inc. Distributed by Varady Cosmetics, Inc., Newark, N. J.

Watkins Tooth Paste: Composition: Each one hundred grams is stated to contain precipitated calcium carbonate (Sturge No. 50), 36.7 Gm., glycerin, 22.8 Gm.; magnesium hydroxide, 7.5 Gm.; gum tragacanth, 0.56 Gm.; soap, 1.13 Gm., water, 30.6 Gm.; saccharin, 8 mg., and flavors (oil of peppermint, oil of spearmint, methyl salicylate, geraniol, oil of cloves and oil of pimento), 0.7 Gm. Manufactured and distributed by the J. R. Watkins Company, Winona, Minn.

SURGEON GENERAL CONFERS WITH COMMITTEE



"WE will oppose to the utmost any effort made to abolish the Pharmacy Corps." Thus concluded the Committee on the Status of Pharmacists in Government Service following a conference with Maj. Gen. Norman T. Kirk, Surgeon General of the Army, held at the headquarters building of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Those attending the special meeting called on February 15, shown in the photograph above, were: (seated l. to r.) Col. Francis P. Kintz, chief of personnel, Office of the Surgeon General; Dr. Robert P. Fischelis of Washington, D. C.; Maj. Gen. Norman T. Kirk, Surgeon General of the Army; Maj. Arthur H. Einbeck of West New York, N. J., Committee chairman; and

Dean H. Evert Kendig of Philadelphia, former Committee chairman; (standing) Col. J. H. Michaelis of the General Staff; Dean Charles H. Rogers of Minneapolis; Dean Henry S. Johnson of New Haven, Conn.; Maj. Frank L. McCartney of Norwich, N. Y.; Dean A. G. DuMez of Baltimore; Dr. Robert L. Swain of New York, Dean D. B. R. Johnson of Norman, Okla., Maj. Bernard Aabel, MAC, pharmacist and liaison officer from the Office of the Surgeon General to the AMERICAN PHARMACEUTICAL ASSOCIATION, and George H. Frates of Washington, D. C.

The Committee met to consider new developments in the chronically unsatisfactory Pharmacy Corps situation and to discuss with Gen. Kirk, and members of his staff and the Army's General

Staff, the present and future status of pharmacy in the Army.

Gen. Kirk stated quite frankly that the Pharmacy Corps had been unwanted in the Medical Department, since additional corps unnecessarily complicate administration of the Department. Because of the establishment of the Pharmacy Corps, other professional groups, such as optometrists, felt justified in demanding a separate corps, he pointed out. Instead of multiplying the present number of corps, Gen. Kirk expressed the conviction that the structure of the Medical Department should be further simplified for administrative purposes. To achieve this objective he recommended that a Medical Service Corps be established by act of Congress, which would absorb the Pharmacy Corps. This Corps would include, in addition to pharmacists, specialists in sanitary engineering, parasitology, optometry, clinical psychology, psychiatric social work and other fields.

Gen. Kirk explained that pharmacy would be set up as a separate section in this Medical Auxiliary Corps, with a pharmacy officer in immediate command. He maintained that the number of pharmacy officers and the development of their services would be as great as in a separately constituted Pharmacy Corps. Pharmaceutical service in this organizational setup would provide, he said, the same opportunities and advantages as a Pharmacy Corps.

Turning to objections which had been raised concerning the proposed commissioning of non-pharmacists in the Pharmacy Corps, Army representatives insisted that this procedure is permissible under Public Law 281-79th Congress. This measure authorizes increasing the commissioned personnel up to 25,000 officers in the Regular Army. In the absence of legislation covering postwar reorganization of the Army, P. L. 281 allegedly supersedes previous legislation, such as the Pharmacy Corps Act, during the period of recruitment of Regular Army officers from the wartime Army.

So far as the Medical Department is concerned, it was said that the only place where such officers—commissioned in the Sanitary Corps and Medical Administrative Corps—can be temporarily assigned is the Pharmacy Corps. Members of the Committee gained the impression that the effect of this move on the Pharmacy Corps was not considered important by the Army since postwar organizational plans of the Medical Department did not now include a place for the Pharmacy Corps as such.

After the meeting with Surgeon General Kirk and other Army representatives, the Committee

reconvened to decide what course of action to take in the light of these developments. The Committee's stand was transmitted to the Surgeon General in a letter of March 8.

Although expressing appreciation to the Surgeon General for the opportunity afforded by his visit for a frank interchange of views, the Committee reaffirmed its stand on two major points.

In connection with the commissioning of non-pharmacists in the Pharmacy Corps as a temporary expedient, the Committee was "not convinced that this is the best procedure to follow." The members adhered to their contention that this policy is contrary to the provisions of the Pharmacy Corps Act. The Medical Administrative Corps of the Regular Army is still available for commissioning specialists who are not pharmacists, it was pointed out. Although use of the M. A. C. for this purpose is restricted by a limitation on rank to that of captain, the Committee expressed the belief that Congress would agree to amend the act, covering the M. A. C., to raise the rank available therein.

The Committee also expressed the "firm conviction that both your objectives and ours with respect to supplying an adequate pharmaceutical service to the Army can best be achieved by a separate corps, such as now exists under P. L. 130-78th Congress, provided such a corps was organized and established in conformity with the law and the intent of Congress. We appreciate the problems which confront you with the integration of the various types of auxiliary services required by the Medical Department of the Army and, of course, we have no objection whatever to the formation of a medical service corps in which these various specialists, exclusive of pharmacy, may be grouped."

The Committee expressed the belief that the practice of pharmacy constitutes a service which cannot be satisfactorily integrated with the various other groups of specialists.

"We assure you," pharmacy's representatives told Gen. Kirk, "that in continuing the Pharmacy Corps and in completing its organization you will have the full support of the entire profession, and if you will indicate how we can be of greater service to you in this connection, we shall be very glad to cooperate to the fullest extent. However, we will oppose to the utmost any effort made to abolish the Pharmacy Corps."

Organizations represented by the Committee on Status of Pharmacists in Government Service are the AMERICAN PHARMACEUTICAL ASSOCIATION, National Association of Retail Druggists, American Association of Colleges of Pharmacy and National Association of Boards of Pharmacy.

APOTHECARY SHOP NEARS COMPLETION

INSTALLING A. PH. A.'s "Old Apothecary Shop" in the U. S. National Museum, Washington, D. C., has been a meticulous and time-consuming task. Formerly known as the Squibb Ancient Pharmacy, this extensive historical collection was given to the AMERICAN PHARMACEUTICAL ASSOCIATION last year by E. R. Squibb and Sons. It includes fixtures and a complete stock of equipment and pharmaceutical relics representative of European pharmacy between the 15th and 19th centuries.

When the ASSOCIATION announced that the Shop would be placed on deposit in the National Museum, Dr. Charles Whitebread, pharmacist and curator of the Division of Medicine and Public Health, immediately initiated plans to make the exhibit one of the outstanding points of interest.

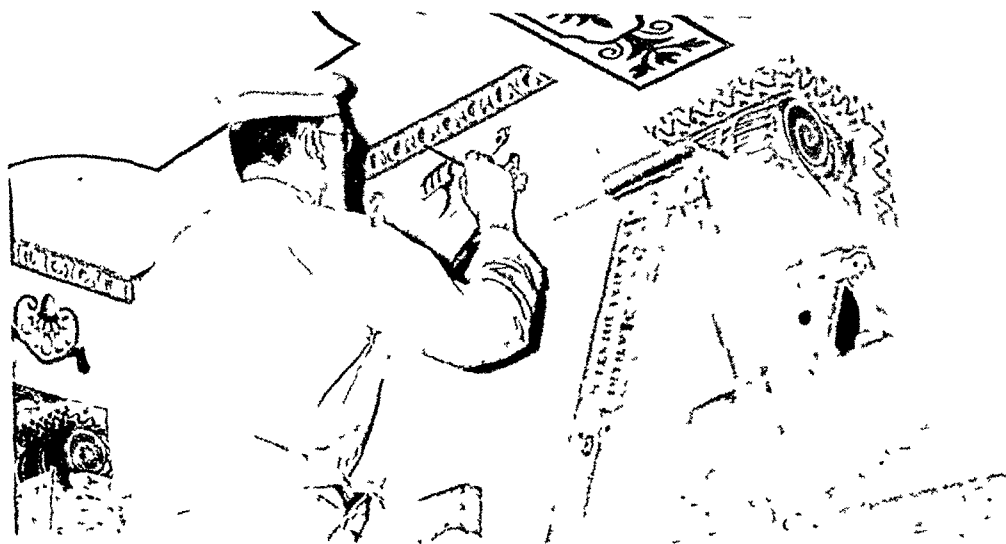
Since April, 1945, the work has gone steadily forward. After constructing an apothecary shop within the Museum, Dr. Whitebread called in a sculptor, artist and other craftsmen to finish the interior in authentic style.

In the photograph below, E. G. Cassedy, official illustrator for the Smithsonian Institution, is shown completing the ornate and colorful decorations of the ceiling. With careful attention to detail, Mr. Cassedy devoted six months to this phase of the work. Preliminary sketches were first put down on paper, based on authentic illustrations of 18th-century apothecary shops.



Another worker is shown above "antiquing" the painted plaster walls. A dark coat of paint is applied and then rubbed off while still wet to produce the effect of a time-worn interior.

Installation of the fixtures has just been completed, and it is expected that the Old Apothecary Shop will be opened to the public early in July. Surrounding the Shop will be other displays pertaining to the profession of pharmacy. ASSOCIATION and Museum officials believe that this section will be of keen interest to the some 2,000,000 persons who visit the U. S. National Museum annually.



SURFACE-ACTIVE AGENTS AS BASES

STUDIES of 9 surface-active agents to determine their suitability as components of hydrophilic ointment bases have been reported in the *Scientific Edition of THIS JOURNAL* (35: 33, 1946). After testing for irritant properties, the investigators chose 3 substances—judged as nonirritating—for application to wounds in rabbits and found them to have little or no effect on the process of tissue repair.

The experiments were conducted by M. C. Dodd, F. W. Hartmann and W. C. Ward of the Eaton Laboratories' Research Department.

Surface-active agents offer possibilities as superior vehicles because of their ability to lower interfacial tension and to promote more thorough diffusion of medicament. Their excellent emulsifying properties provide ointments that are washable with water alone. This permits easy removal from injured tissue for frequent observation with a minimum of mechanical irritation.

These properties also make surface-active agents suitable as medicated cleansing agents for removal of debris and dirt, the authors point out. Moreover, the use of water in hydrophilic bases of this type is unnecessary.

Although washable bases of the oil-in-water type serve a useful and valuable purpose, some disadvantages have been noted: certain incompatibilities, weakening of the protective physical covering due to water, and the tendency of water to evaporate causing a deposit of oily constituent and a concentration of ingredients.

In view of this, experience with synthetic organic materials of the surface-active type suggested the possibility of compounding pharmaceutically acceptable bases which contain no water but have the recognized advantages of water miscibility.

Workers at the Eaton Laboratories selected 9 surface-active agents which, by their physical characteristics, seemed potentially useful for this purpose. Anionic, cationic and nonionic types are all represented in the following list:

1. Sulfonated hydrogenated castor oil (National Oil Products Co.), a water soluble material which has been reported as an ointment base [*THIS JOURNAL, Scient. Ed.*, 30: 145, 1941].

2. Carbowax 4000 (Carbide and Carbon Chemicals Corp.), a polyethylene glycol resembling paraffin in its waxy appearance.

NON-AQUEOUS, WATER-MISCIBLE OINTMENT BASES APPEAR TO BE ADVANTAGEOUS, THREE OF NINE AGENTS TESTED DID NOT INHIBIT HEALING OR IRRITATE

3. Carbowax 1500, a mixture of polyethylene glycols having an appearance similar to white petrolatum. Several reports have appeared on the use of Carbowaxes in ointment bases [*THIS JOURNAL*, 4: 251, 1943; *Ann. Surg.*, 118: 741, 1943].

4. Trigamine Stearate (Glyco Products Co.) is a trade name for a product similar to triethanolamine stearate. For testing purposes it was necessary to compound this material as follows: Trigamine Stearate, 30%; propylene glycol, 70%.

5. Arlacel B (Atlas Powder Co.) is the trade name for mannitan mono-oleate. For testing purposes it was compounded as follows: Arlacel B, 85%; Carbowax 4000, 15%. Although Arlacel B is insoluble in water, it is considered a useful emulsifier which lends itself well to compounding non-water-containing bases.

6. Tween 60 (Atlas Powder Co.) is the trade name for a polyoxyalkylene derivative of sorbitan monostearate. It is somewhat analogous to Arlacel B, but is water soluble. For testing, this substance was compounded as follows: Tween 60, 90%; Carbowax 4000, 10%. Use of both the Spans and Tweens, supplied by this firm, in sulfonamide ointment bases has been reported to permit and enhance the release of medicament [*Surg. Gynecol. Obstet.*, 80: 85, 1945].

7. Glyceryl laurate (Glyco Products Co.) is the glycerin ester of lauric acid. This was tested undiluted.

8. Cationic Agent D (Victor Chemical Works) is essentially the stearyl amine salt of the stearyl amide of ethyl phosphoric acid.

9. Triton K-60 (Rohm and Haas Co.) is the trade name for cetyl dimethyl benzyl ammonium chloride.

Propylene glycol was used with the above-mentioned 9 materials as an excipient in preparing bases.

Where possible, Dodd, Hartmann and Ward used the surface-active agents undiluted for determining irritant properties on laboratory animals and human beings and the effect on healing

of wounds in rabbits. In cases where this was impractical, the highest percentage level of the material that would permit a usable combination was employed.

The Carbowaxes were not tested since a thorough investigation by Smyth and co-workers had indicated the lack of irritation from these substances. Triton K-60 was not employed in the tests on rabbits because it was not available in the laboratory at the time.

The surface-active agents were applied to the eyes of rabbits and the intact skin of rabbits and humans to determine irritant properties. In the eye of a rabbit, sulfonated hydrogenated castor oil and Cationic Agent D were judged to be the most irritating. Trigamine Stearate and glyceryl laurate caused no more than hyperemia of the conjunctiva. Arlacel B and Tween 60 elicited no reaction. When applied to the depilated skin of rabbits sulfonated hydrogenated castor oil and Cationic Agent D again were found to be the most irritating of the substances tested, while Arlacel B had the least effect.

rabbits were made. Three excisions were used for testing the surface-active agents; the remaining 3 excisions on each animal were used as controls.

Observation of the wounds, recording of their size and renewal of treatment were carried out every other day until all wounds were healed. In commenting on the data from these tests, the investigators said:

"The wounds treated with glyceryl laurate (100%) healed at a rate similar to that of the control groups, with a negligible difference in size found at the end of the healing period. . . . It appears that glyceryl laurate had a very slight effect, if any, on the healing process.

"Wounds to which Tween 60 (90%) was applied also healed at almost the same rate as the controls. . . . Here, again, the effect of the material applied to the wound was slight.

"Considering wounds treated with Arlacel B (85%), the similarity of healing between the treated and control groups from start to finish is striking. . . . There was no adverse effect on

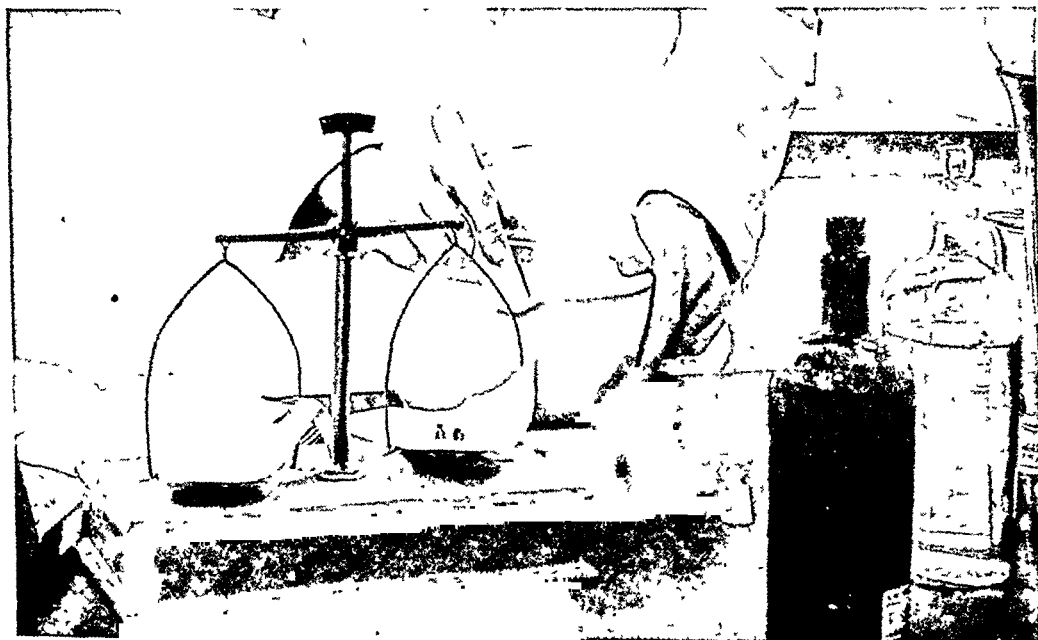


Photo by U. S. Army, Signal Corps

In tests on human skin, Arlacel B, Tween 60 and glyceryl laurate caused no irritation of the skin after forty-eight hours. Sulfonated hydrogenated castor oil, Trigamine Stearate, Cationic Agent D, and Triton K-60 behaved as primary chemical irritants, the authors reported.

On this basis the former 3 agents were selected as worthy of careful study in regard to their effect on the healing of experimental wounds. Six excisions from the depilated skin of each of 20

healing by Arlacel B under experimental conditions."

Microscopic findings from 6 biopsy specimens, taken from a representative rabbit, were "in good agreement with the gross observations."

Results of this work suggest "certain correlations between surface activity and cutaneous irritation which may be of value in the selection of such agents for use on the skin," it was concluded. "Data obtained as the result of irrita-

tion tests on human skin would seem to preclude alkalinity, per se, as the cause of cutaneous irritation from surface-active agents."

Instead, the authors point out, examination of the chemical structure of these substances in relation to experimental results "suggests an interesting observation on the correlation of ionic character with a high degree of surface activity and irritation. . . . The nonionic materials—the

Carbowaxes, glyceryl laurate, Tween 60, and Arlacel B—were nonirritating.

"The results presented indicate that the ionic character of a surface-active agent is more important in the prediction of potential irritation than is its *pH* value. This would lead to the conclusion that nonionic surface-active agents are preferable for use as major components of ointment vehicles."

MIXED INFECTIONS TREATED WITH PENICILLIN

PARACHLOROPHENOL has been found to be a safe and powerful disinfectant for use with penicillin in treating mixed wound infections. It has been known for some time that the enzyme penicillinase, produced by many aerobic gram-negative organisms, inactivates penicillin. Over 200 compounds and antibiotics were tested by investigators at the Columbia University College of Physicians and Surgeons to find an antiseptic which would protect penicillin against the enzyme-producing organisms (*J. Am. Med. Assoc.*, 130:121, 1946).

One hundred thirty-four strains of gram-negative bacteria isolated from wound infections were tested for their destructive action on penicillin. To combat these organisms in the presence of penicillin, the investigators found that "of the antiseptics so far tested and which are available at present, parachlorophenol is the most effective."

Moreover, parachlorophenol had the properties which the investigators considered criteria for the antiseptic they were seeking: It had to be active in the presence of organic matter and able to penetrate pus or wound discharges and the surrounding infected tissues. It had to be soluble in water; it had to prevent growth of bacteria in a wound without retarding the healing of the wound and it had to be nontoxic in the amounts needed when used for local application to infected wounds.

Parachlorophenol is readily soluble in water or in isotonic solution of sodium chloride in a concentration of 1:200. For clinical application a 1:400 concentration was used in either (a) isotonic solution of sodium chloride or (b) Carbowax 4000-propylene glycol (45 to 55% by weight) ointment base.

The ointment is prepared by melting 45 parts of Carbowax 4000[†] together with 55 parts of propylene glycol, either over a free flame or in a hot

water bath. When thoroughly mixed, sterilize in a dry oven at 140° C. for four hours and then allow to cool. When the mixture begins to solidify (40° C.), the penicillin, 1000 units per gram, and parachlorophenol*, 0.25%, are added. The ointment may then be incorporated sterily into fine meshed gauze (piece by piece cut to a convenient size), placed in a container, and stored in the refrigerator until used.

The ointment, applied either directly or as impregnated gauze, was preferred to the saline solution for local application to wound surfaces. The solution in normal saline may be used to irrigate sinus tracts.

Stability tests on both the ointment and solution at 5° C. indicated that there was no loss of penicillin titer after two weeks' storage. After six to twelve weeks' storage the penicillin activity was reduced about 50%.

In addition to *p*-chlorophenol, the following showed clinical promise for use in conjunction with penicillin when gram-negative organisms are present: 9-amino-acridine hydrochloride, 5 nitro-2-furaldehyde semicarbazone, streptothricin and streptomycin.

The investigators recommend that the individual strain susceptibility of gram-negative organisms isolated from any given infection should be tested for the inhibitory action of the five agents, since the sensitivity of different strains within the same species as well as the sensitivity of different species varies greatly.

The investigators reporting on the treatment of mixed infections with penicillin were Frank L. Meleney, M.D., Balbina A. Johnson, B.A., and Frances Colonna, M.S., of New York, and Capt. Edwin J. Pulaski, MC, A. U. S.

[†] A product of Carbide and Carbon Chemicals Corp., 30 E. 42nd St., New York 17.

* Available from Eastman Kodak Co., Rochester, N. Y.

A FURTHER NOTE ON MODERN PRESCRIBING TENDENCIES

by L. W. RISING, E. M. PLEIN, and J. STROM

UNIVERSITY OF WASHINGTON, COLLEGE OF PHARMACY

SUBURBAN pharmacies can have a fine volume of prescriptions, even in what appear to be unfavorable locations. We have recently completed a survey of such a pharmacy. During the four-month inspection period* it filled an average of 31 prescriptions each day.

The pharmacy is unpretentious and is situated next to a large railroad yard which takes away what would normally be considered a quarter of its trading area. But the owners are real pharmacists who work at their profession. Their over-all volume reflects this energy and enthusiasm and shows that the handicap of location can sometimes be overemphasized.



The data collected include the following:

1. Number of prescriptions filled:

New.....	779 or 27.56%
Refills.....	2,933 or 72.44%
Total.....	3,712

It is interesting to note how the shortage of physicians during the war has, in this instance, reversed the ratio of new to refilled prescriptions.

2. Number of ingredients per new prescription:

NUMBER OF PRESCRIPTIONS

One ingredient.....	587
Two ingredients.....	103
Three ingredients.....	56
Four ingredients.....	23
Five ingredients.....	7
Six ingredients.....	2
Seven ingredients.....	1
Total.....	779

* The survey covered the period November 1, 1944, to March 1, 1945.

This is one in a series of analyses of prescription records by the authors, published in the JOURNAL and elsewhere. See THIS JOURNAL, 6: 47, 1945, for a preceding study and additional references.—THE EDITOR

3. Prescriptions requiring compounding: 32.77%.

This is a more favorable picture than that shown in a number of recent surveys made by the authors and

others in which the percentage of prescriptions requiring compounding was more nearly 20%.

4. Average selling price of new prescriptions: \$1.25.

5. Number of drugs required to fill the 779 new prescriptions: 392.

6. Drugs used 10 or more times in filling the 779 new prescriptions:

Drugs	TIMES USED
Codeine phosphate powder.....	58
.....	37
.....	30
.....	25
.....	20
Nembutal Capsules, 1 1/2 gr.....	16
Elixir phenobarbital.....	15
Syrup Cosanyl.....	15
Elixir terpin hydrate and codeine.....	14
.....	13
.....	12
.....	10

7. Combined tabulation of certain classes of drugs and of drugs and their preparations:

Codeine phosphate is the most popular single ingredient, being used 58 times in filling the 779 prescriptions. However, if all of the codeine salts, tablets and preparations, such as elixirs containing codeine, are combined, we find the drug used 148 times. Various other combinations among the 392 drugs when tabulated together provide interesting data on prescribing tendencies, as shown below:



Drugs	TIMES USED
Codeine, its salts, and preparations containing codeine..	148
Sulfonamides and preparations containing sulfonamides	116
Barbiturates and preparations containing barbiturates..	102
Vitamins.....	54
Acetylsalicylic acid and Empirin.....	54
Belladonna, atropine, and preparations containing these drugs.....	24
Hormones.....	23
Aminophyllin-containing preparations.....	10
Digitalis-containing preparations.....	7

PROGRESS IN ANTIMALARIA THERAPY

by JAMES A. SHANNON

RESEARCH SERVICE, THIRD MEDICAL DIVISION, GOLDWATER MEMORIAL HOSPITAL, NEW YORK
AND
DEPARTMENT OF MEDICINE, NEW YORK UNIVERSITY COLLEGE OF MEDICINE

STUDIES to improve antimalarial therapy have been carried on during the past four years in a rather comprehensive manner. The program of studies has been supported by the Committee on Medical Research of the Office of Scientific Research and Development, under the sponsorship of the National Research Council and the three Services. The various aspects of the program have been integrated during the past two years by the Board for the Coordination of Malarial Studies. This effort has involved the active participation of many synthetic chemists, biochemists and pharmacologists in academic and industrial laboratories, as well as clinicians in civilian and service installations.

It is the purpose of this brief presentation to give in outline the main course of these studies and to describe somewhat more fully some of the early experimental work with atabrine which permitted the effective management of the malaria hazard in the Services through the development of a proper usage of the drug.

The general program encompassed the study of the underlying disease mechanisms of the malarial infections, the biochemical characteristics of certain of the infectious agents, and the chemical characteristics of selected antimalarials. However, the major effort was devoted to a detailed study of such antimalarials as were already available and a search for more effective ones in a wide variety of chemical series.

The direction of the early work, i.e., in 1942-1943, was conditioned largely by the early loss to the United Nations of their normal sources of quinine and by reports, from the Services to the National Research Council and its committees, which carried the suggestion that atabrine as then used was of little use in the suppression and treatment of malaria.

These circumstances posed a problem to investigators in the summer and fall of 1942. There

AN AUTHORITY WHO PARTICIPATED IN THE SECRET WARTIME RESEARCH PROGRAM ON MALARIA OUTLINES FOR PHARMACISTS SOME OF THE RESULTS ACHIEVED . . . PROPER USE OF ATABRINE EFFECTIVE CONTROL, WITH BETTER DRUGS ON THE WAY.

appeared to be no suitable antimalarial substance available in amounts sufficient to conduct large-scale military operations in hyperendemic malarious areas. Nor was there an adequate supply of antimalarial substance for the civilian populations of similar areas.

The solution of this problem came as the result of re-evaluating the potentialities of atabrine and the cinchona alkaloids other than quinine. From these studies it was clearly apparent that atabrine, when used properly, is a highly effective agent and one which is superior to quinine for the routine management of the malarias.^{1,2,3} It was also apparent that any one of the cinchona alkaloids is roughly equivalent in effectiveness to quinine.⁴

The latter finding placed the use of a combination of the alkaloids, such as totaquine, on a reasonable basis. This permitted the use of cinchona barks of Central and South America (which are low in quinine) for the production of an effective antimalarial substance in large quantity and at relatively low cost. The product was then available to civilians at a time when quinine was withdrawn from the general market and when the production of atabrine was too small for any to be available for civilian use.

A second phase of the studies was concerned with the development of new antimalarials. It was believed that although an antimalarial is qualitatively similar to atabrine in the character of the antimalarial action it exerts, it might be superior if the tolerated dose is sufficiently in excess of that required to terminate a clinical attack. It was hoped that such an increase in antimalarial activity would not only be useful for suppressive purposes, but would also result in a

* Presented as part of the Seventh Annual Scientific Award Ceremony of the American Pharmaceutical Manufacturer's Association, in honor of the Rockefeller Institute for Medical Research, December 10, 1945.

This paper is based partially upon work done under contracts recommended by the Committee on Medical Research between the Office of Scientific Research and Development and various universities. The work on atabrine reported in the latter part of the paper was as the result of such a contract between the Office of Scientific Research and Development and New York University.

chin was undertaken. Investigations to date suggest that the prospect of obtaining a generally useful curative agent from this group of substances is rather bright, though highly speculative.

Such a summary statement does not give a very clear picture of what has been accomplished in terms of bettering our understanding of the malarias themselves, our ability to approach the problem of devising and examining antimalarials in a more effective manner, and our ability to deal with the malarial hazard in a practical manner. A general appreciation of each of these accomplishments will only be possible as the work of the many contributing investigators appears in the medical literature.

Atabrine Was In Ill Repute

Some insight into the general philosophy of one aspect of the studies can be gleaned from an examination of some of the early work with atabrine. To say that atabrine was in low repute in the spring and summer of 1942 is, at best, an understatement. It was not believed possible, in the wholly susceptible individual, to produce with atabrine a prompt termination of the clinical attack, more particularly in falciparum malaria, much less a cure in either falciparum or vivax malaria. Furthermore, the drug was reported to be both rather toxic and ineffective when used as a suppressive. Of immediate importance to the ultimate control of the malarias as a tactical problem in the Services, was the growing feeling among both the medical and line officers that the control of malaria by atabrine was not practicable.

The decision to reinvestigate the potentialities of atabrine came as the result of a belief that this drug, with all its apparent limitations, was apt to be the only one available for use by the Services for some time to come. The problem, then, was to gather such information as was needed in order to utilize the drug most effectively.

As an initial working premise it was assumed, and later demonstrated, that the antimalarial activity of atabrine at any time is a reflection of the concentration of the drug in the plasma.^{2,4} This was not a new concept of therapy but rather an extension—to include the action of atabrine in malaria—of the situation known to hold for the sulfonamides in bacterial disease. Consequently, it was essential in the investigation to have a chemical method for estimating atabrine in biological fluids which has adequate sensitiv-

ity, precision, and specificity. Such a method was developed by Dr. Brodie of our Service in the fall and winter of 1942⁵ and was immediately applied to the problem.

The investigations were initiated with a twofold purpose in view. The first was to define the relationship between the oral or other methods of administering atabrine and the concentration it achieves in the plasma. The second was to define the relationship between plasma atabrine concentration and its antimalarial effect. These two aspects of the problem are best dissociated experimentally and can be most easily discussed separately.

Physiological disposition of atabrine: It must be appreciated that the plasma atabrine concentration obtained at any time on any regimen of therapy is determined by the dosage utilized together with the net result of the processes of absorption, distribution, degradation and excretion. Atabrine is almost completely absorbed in the gastrointestinal tract and renal excretion accounts for very little of the daily dose (Table I).

TABLE I.—THE ABSORPTION AND EXCRETION OF ATABRINE IN MAN

These data may be taken as typical of the results obtaining during and just after the administration of 100 mg. of atabrine dihydrochloride three times a day to a normal adult.¹

DAY OF OBSER- VATION	DAILY ATABRINE	PLASMA CONCEN- TRATION micro- mg.	RENAL EXCRE- TION mgm./day	FECAL EXCRE- TION mgm./day
1	300	36	...	...
2	300	28	...	...
3	300	32	4.8	30
4	300	48	5.5	7
5	...	37	7.3	36
6	...	17	3.3	10
7	...	...	8.0	6
8	...	...	2.2	11

From these facts and the fact that its plasma concentration becomes stabilized after several days of drug administration at constant dosage, it may be concluded that atabrine is disposed of by the body mainly by processes which result in its degradation. It follows, then, that the major factors which will relate drug administration and plasma drug concentrations are those which condition the processes of distribution and degradation in the body.

Data were first collected which define the distribution of atabrine in the blood (Table II). It was found that the relative concentration of the

TABLE II.—THE DISTRIBUTION OF ATABRINE IN HUMAN BLOOD

These data may be taken as typical of the results obtaining during the administration of 100 mg of atabrine dihydrochloride three times a day to a normal adult ¹

	ATABRINE CONCENTRATION (microgm./liter)
Plasma ..	89
Plasma water	89
Cerebrospinal fluid	54
Erythrocytes ...	117
Leucocytes ...	18,400
Whole blood ...	551
Plasma binding (per cent total)	90

drug in plasma, erythrocytes and leucocytes is in the order of 1, to 1, to 100. This excessive localization of atabrine in the leucocytes acquired special importance in studies to assay the antimalarial activity of the drug, or to delineate the factors concerned with its physiological disposition. This is true because the concentration of atabrine in whole blood at any time during a period of therapy is more dependent upon the leucocyte count than the underlying chemotherapeutically active concentration in the plasma. It may be noted in passing that the major portion of atabrine in the plasma is bound to the nondiffusible constituents in the plasma. It would, perhaps, have been more precise were the studies of the physiological disposition and therapeutic activity of atabrine related to the concentration of unbound drug in plasma water. However, this appeared to be an unnecessary refinement at the time.

Studies on the distribution of atabrine in experimental animals indicated that the drug may achieve concentrations in the liver and spleen as high as 10,000 to 20,000 times those concurrently observed in the plasma. Localization in other tissues was found to be less extensive, but highly significant (Table III). An extension of these distribution studies to the human through indirect experimental approaches led to conclusions which were essentially similar. Thus, it was demonstrated that a major portion of the administered atabrine is localized in the tissues of the body, leaving little in the plasma to exert a chemotherapeutic effect. It is in consequence of this that unless large initial doses of the drug are given, the initial plasma drug concentrations are invariably low. However, the extensive localization, together with the low rates of degradation and renal excretion, lead to a low rate of decline of the plasma atabrine concentration. Con-

sequently there is a low rate of loss of the protection conferred by atabrine, subsequent to the termination of drug administration.

Antimalarial Activity

The response of well-standardized and rigidly controlled blood-induced vivax and falciparum malaria to various plasma concentrations of atabrine was utilized to determine the antimalarial activity of the drug in terms of its ability to terminate or suppress a clinical attack.

It was found, in such infections, that the erythrocytic forms of *P. vivax* (McCoy strain) are completely and permanently eradicated when plasma atabrine concentrations of 30 micrograms per liter or more are maintained for not less than four days.

Plasma atabrine levels between 10 and 30 micrograms per liter generally produce temporary or partial effects. Levels below 10 micrograms per liter produce little or no effect when only maintained for a similar four-day period. The erythrocytic forms of *P. falciparum* (McClendon strain) appear to be more resistant and require approximately 50 micrograms per liter maintained for a six-day period for eradication.⁴

Subsequent work showed that the erythrocytic phase of a mosquito-induced vivax malaria (McCoy strain) has the same sensitivity to the chemotherapeutic activity of quinine as the blood-induced infections detailed above. The figures just quoted, then, have significance when applied to the naturally-acquired malarias. Subsequent work has also substantiated a previous belief that there are strain differences in susceptibility to the antimalarial activity of quinine, and these differences may be expected to extend in certain instances to the antimalarial activity of atabrine and other agents. However, the differences ob-

TABLE III.—DISTRIBUTION OF ATABRINE IN THE TISSUES OF A DOG

The dog received a daily dose of 20 mg. per kilogram of atabrine dihydrochloride daily for a period of 14 days prior to the experiment. The last dose was given 14 hours before the animal was sacrificed (wt. 10.0 kg.) ¹

	ATABRINE CONCENTRATION (mg./kg.)
Plasma	0.081
Muscle	55.0
Lung	310.0
Spleen	571.0
Liver...	1306.0

served have not been sufficiently great for one to expect that the regimens of atabrine therapy now in general use will be inadequate except in special instances.⁴

The correlation between oral dosage and anti-malarial effect is poor so that it is difficult to state the activity of atabrine in terms of oral dosage. However, knowing the minimal plasma drug levels which are required to produce a given therapeutic effect and the range of plasma drug concentrations which are to be expected on a given dosage regimen in a group of individuals, it is possible to place the oral dosage sufficiently high for the maximal benefit to be derived from the drug for all but the exceptional individual.

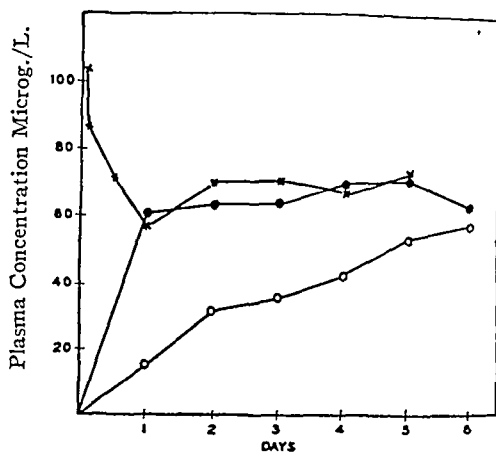
Treatment of Clinical Attack

It was with an understanding of these aspects of the physiological disposition and antimalarial activity of atabrine that it was possible to consider rational regimens of therapy for both the suppression of the malarias and for the treatment of the clinical attack.

The primary objective to be sought in the treatment of the clinical attack is an abrupt termination of the clinical manifestations of the infection. The lower curve in Fig. 1 represents the mean daily plasma atabrine concentration of a group of individuals who received 0.1 Gm. of atabrine three times daily, a dosage schedule commonly recommended prior to 1943. Very low plasma drug concentrations are achieved with such a regimen during the first two or three days of therapy because of the extensive localization of the drug in tissues, as noted previously. It is true that the plasma level increases progressively throughout the period of drug administration as more and more atabrine accumulates in the tissue. Because of the early low levels, it is not to be expected that such a dosage will produce an early termination of clinical activity. If dosage is continued for a period of days, plasma drug concentrations are achieved which will terminate the clinical attack. However, it is the delay in the initial effect of atabrine, with such a dosage schedule, that led to the belief that atabrine therapy must be preceded by a two- to three-day course of quinine if an immediate effect is to be obtained.

The situation is quite different when doses of atabrine totaling 0.8 to 1.0 Gm. are administered during the initial day of therapy. This may be done by either the oral route or by a combination of intramuscular and oral administration. High plasma drug concentrations are obtained with oral regimens during the initial twenty-four

VARIOUS QUINACRINE REGIMENS
AND RESULTANT PLASMA CONCENTRATION



- Group A: 0.1 Gm. TID PC
- Group B: 0.3 Gm. first day, then 0.1 Gm. TID PC
- ×—× Group C: 0.4 Gm. intramus. and 0.4 Gm. orally first day, then 0.1 Gm. TID PC

FIGURE 1

Data presented in previous publication.³

hours and with intramuscular regimens within fifteen minutes. These may be maintained with the serial administration of 0.1 Gm. three times daily for some six days thereafter. It was to be expected from such plasma drug curves that a therapeutic effect would be apparent very early during the course of drug administration and, in fact, such was found to be the case.

Suppressive Therapy

The various problems of suppressive anti-malarial therapy were examined, using much the same experimental approach. As was to be expected from the excessive localization of atabrine in the body together with the low rates of degradation and excretion, it was found that the plasma atabrine level during suppressive therapy is dependent more upon the total weekly dosage than upon the pattern of the dosage regimen utilized. It was also found that when drug administration is limited to 0.4 Gm. weekly, as was initially advised, many individuals are found to have plasma drug levels which are considerably below those required to produce a demonstrable suppressive effect.

The data suggested that clinical malaria should be suppressed in all but a small proportion of individuals during active exposure to malaria by the weekly administration of 0.6 to 0.7 Gm. This

dosage in most individuals will result in plasma atabrine levels known to have a significant effect on the erythrocytic phase of the malaras. The unpleasant gastrointestinal reactions which were encountered when atabrine was administered in the earlier recommended dosage of 0.2 Gm. twice weekly are minimized and a therapeutic advantage gained when the larger total weekly dosage is administered in small daily doses of 0.1 Gm. Suppressive therapy of this type is commonly continued for a three-week period after the last exposure. This may be expected to accomplish cures of suppressed falciparum malaria but not of the suppressed vivax malaria. Clinical activity due to the latter will appear in most infected individuals within a few weeks to some months later, but may also be suppressed by a continuation of suppressive therapy. The latter procedure seems advisable when relapses are numerous and occur at short intervals.

Atabrine Best Available

Most of these facts were collected during the winter and spring of 1943 so that it was possible to recommend a change in the management of malaria in July of that year. These recommendations were accepted by the Services shortly thereafter, and, with minor changes, have been in use since that time.⁵ The belief that atabrine, if used in a rational manner, would satisfy the immediate requirements of the Service for a practical and effective antimalarial was found to be justified. Comparing the results obtained with atabrine with those previously and concurrently observed with quinine, the Board for the Coordination of Malarial Studies concluded in the fall of 1944 that atabrine is quite superior to quinine for most purposes.²

The experience with atabrine very early in the malaria program was important for two reasons: First, as noted above, the rational use of the drug established it as one of extraordinary usefulness and one which satisfied an immediate and urgent need. Second, the observations with atabrine confirmed in a very dramatic manner the earlier belief that it is as important to define clearly the operation of those factors in the host which are concerned with the physiological disposition of antimalarial, as it is to define the antimalarial activity of the agent itself. This view has characterized the clinical study of antimalarials since that time and it is predictable that a similar view can be used with profit in the examination of therapeutic agents in diverse situations.

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ACTION OF ISONIPECAINE EXPLORED, SUGGESTS ANTIDOTE

Isonipecaïne—the analgetic, spasmolytic and sedative—has been found also to possess considerable local anesthetic properties. Reporting on experiments in the *Scientific Edition* of THIS JOURNAL (35: 44, 1946), Dr. E. Leong Way of George Washington University School of Medicine estimates that isonipecaine is approximately seven-tenths as effective in this respect as cocaine.

The somewhat irritating properties of the drug preclude its use, however, as a local anesthetic. These findings nevertheless carry the implication, the investigator points out, that isonipecaine may have practical uses previously not realized. Preliminary experiments, for example, indicate that the drug, like certain other local anesthetics, may depress the irritability of the heart. Tests to determine its effectiveness against cardiac arrhythmias are therefore indicated.

Commenting on isonipecaine toxicity, Dr. Way suggests that "it would be logical to try to treat or prevent overdosage with agents similar to those used in cases of local anesthetic toxicity."

Tatum and others have indicated that the barbiturates are the preferable agents to employ. Not only are the barbiturates effective in arresting convulsions resulting from an overdose of local anesthetic, but if administered prophylactically the minimum fatal dose of the local anesthetic is increased three or four times.

Preliminary unpublished experiments by Dr. Way indicate that barbiturates act likewise when toxic doses of isonipecaine are administered.

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SUBSTITUTE FOR OLIVE OIL

Due to the unavailability of olive oil in this section, our leading dermatologist is anxious to find another vegetable oil to replace it in calamine liniment, N. F. Various oils have been tried without satisfactory results.—G. K., Ariz.

When olive oil is unavailable, it is possible and permissible to make preparations which require this ingredient by substituting cottonseed oil, U. S. P. This was authorized in the First Supplement to National Formulary VII.

Our laboratory has found this replacement to be satisfactory in the preparation of calamine liniment, about which you specifically inquired. However, on occasion cottonseed oil does not contain sufficient free acid to give a good emulsion with satisfactory stability. In such case we suggest that 0.5% oleic acid also be added.

ETHYLENE DISULPHONATE

I have inquired of several sources concerning ethylene disulfonate but have not received concrete information. Your advice, and the source of supply, will be appreciated.—E. W., Kentucky

Several pharmacists have inquired concerning ethylene disulfonate, marketed under the trade name Allergosil. This preparation has been the object of considerable investigation. While there have been favorable reports, it is claimed that the majority of investigators are not impressed with its possible therapeutic value.

The subject is now being reviewed by the Council on Pharmacy and Chemistry of the American Medical Association. A report will soon be published by this body, at which time further mention of ethylene disulfonate will be made in THIS JOURNAL.

When the product was launched as a cure for asthma the *Journal of the American Medical Association* considered it "another example of hasty and inadvised questionable promotional practice." In the January, 1944, issue of the *Journal of Allergy*, Collis and Hunt concluded from experiments that ethylene disulfonate "did not produce a significant degree of protection against anaphylactic shock."

B COMPLEX FOR INFANTS

Can you offer suggestions for vitamin B complex drops, nonalcoholic, for supplementary infant feeding?—W. G., Texas

The following formula from the *Bulletin of the American Society of Hospital Pharmacists* should fill your need:

	Gm./cc.
Thiamine chloride.....	1.25
Riboflavin.....	0.25
Pyridoxine hydrochloride.....	0.75
Calcium pantothenate.....	0.2
Nicotinic acid.....	5
Distilled water.....	200
Syrup cherry, q. s. ad.....	500

Dissolve the niacin and riboflavin in water with the aid of heat. Cool, add the other ingredients, and filter.

Dosage will be determined by the physician. The protective supplement prescribed in one hospital was 0.25 cc. or approximately 5 drops.

FORMULAS FOR MANUFACTURING

Please send list of books which deal with pharmaceutical formulas for manufacturing concerns.—M. H., Michigan

In addition to the U. S. P. and N. F., the following books should provide formulas of interest:

The Pharmaceutical Recipe Book (Third Edition)—American Pharmaceutical Association, 2215 Constitution Avenue, N. W., Washington 7, D. C., \$5.

Pharmaceutical Formulas, Vols. I and II—Chemist and Druggist, 28 Essex Street, Strand, London, W. C. 2, England.

Chemical Formulary, Vols. I to VII—H. Bennett—Chemical Publishing Company, Inc., 234 King Street, Brooklyn, New York.

Drug and Cosmetic Review—Drug and Cosmetic Industry, 101 West 31st Street, New York, New York.

PLASTIC LINERS FOR DENTURES

I am interested in obtaining the formula of a plastic preparation for use by dentists in lining dentures which have become loose in the patient's mouth. It is a paste said to become an integral part of the denture after application.—M. M., New York

A number of so-called "permanent liners" are on the market. These usually consist of 35 to 60% methyl methacrylate resin in a volatile solvent or plasticizer, such as ethyl or amyl acetate or glyceryl triacetate. Several disadvantages of these preparations are revealed in studies by research associates of the American Dental Association (*J. Am. Dent. Assoc.*, 33: 304, 1946). They concluded that liners currently available tend to distort, weaken and soften the denture base resin. Much of this difficulty is due to the solvents used.

Evidence seems to indicate that liners produce temporary improvement in the fit of loose dentures, but results are not permanent nor comparable to an efficient rebase.

A survey of practicing dentists in regard to the use of liners revealed that 17 considered them temporary; 1, permanent; 8, entirely unsatisfactory. Half of the dentists claimed that the liners had no effect on occlusion, while the other half noted a disturbance. Sixty-three per cent observed no effect on the denture base, but the remainder noted such effects as warping, softening and decomposition.

SUNBURN PREVENTIVES

What may be used as a "sun screen" preparation? Could you also tell me what esculin is and where it may be obtained.—F. C., New York

A discussion of sunburn prevention appeared in the July, 1945, issue of *THIS JOURNAL*, together with the following formula which has been admitted to N. F. VIII as a sun-tan ointment:

	Gm.
Phenyl salicylate.....	5
Ethyl aminobenzoate.....	2
Titanium dioxide.....	1
Neocalamine.....	1
Yellow ferric oxide.....	0.1
Coumarin.....	0.1
White wax.....	2
Triethanolamine.....	0.5
Stearyl alcohol.....	8
Stearic acid.....	2
Glycerin.....	10
Distilled water, q. s. ad.....	100

Warm the triethanolamine and the stearic acid together on a water bath for 10 minutes, add the white wax and the stearyl alcohol, and continue to heat until completely melted. Dissolve the phenyl salicylate, ethyl aminobenzoate and the coumarin in this mixture. Add the titanium dioxide, neocalamine and yellow ferric oxide in a fine state of division, and mix well. Add the distilled water and the glycerin, which have been previously heated together to about 70°, with constant stirring. Continue the stirring until the emulsion formed has an ointment-like consistency.

N. F. Sun Cream has the advantage of being washable, but the fact that an application may be removed while swimming must also be borne in mind when it is used at the beach. This preparation is not completely effective in the sense of screening out all radiation, since tanning is usually desirable.

Esculin is a glycoside constituent of the bark of the horse chestnut and has been used to a limited extent, as a 4% solution or ointment, to

the skin from sunburn. All of the literature references at hand are in foreign publications. It is available in this country, however, from Glogau and Co., 1120 Rand-McNally Bldg., Chicago 5.

Another query, requesting a source of titanium oxide and red petroleum vet. jelly, no doubt stems from a study of sunscreens reported in the January 5, 1946, issue of the *Journal of the American Medical Association*. The object here,

however, was to provide as complete protection as possible to marooned naval or aviation personnel. For example, red petroleum vet. jelly (Standard Oil Co.) was found to provide complete protection against strong sunlight for as long as twenty hours, a quality obviously undesirable to those desiring a suntan. Moreover, this impure petrolatum clings so tenaciously that it is very difficult to remove even with soap and water.

L. VAN ITALLIE OBSERVES 80TH BIRTHDAY

by GEORGE URDANG

DIRECTOR, AMERICAN INSTITUTE OF THE HISTORY OF PHARMACY

ON March 12 an honorary member of the AMERICAN PHARMACEUTICAL ASSOCIATION, Professor Emeritus Leopold Van Itallie of the University of Leyden, Holland, celebrated his eightieth birthday. This fact is all the more enjoyable as some time ago the sad news of the death of this venerable pharmaceutical scientist had been reported in the English pharmaceutical press. Another member of the Van Itallie family, lecturer at the University of Amsterdam, and his wife had committed suicide during the Nazi occupation of Holland, and apparently the two Van Itallies had been confused by the reporter.

It is little short of a miracle indeed that the old gentleman has survived all the tribulations which he had to go through. According to a communication just received from the secretary of the *Fédération Internationale Pharmaceutique*, Dr. T. Potjewijd, Leopold Van Itallie and his wife lived for years in different concentration camps and were finally transported to Theresienstadt, in most cases the last station before extinction in the gas chambers of Auschwitz or Belsen. The quick advance of the American armies saved his life and that of Mrs. Van Itallie as it saved about 35,000 others of the about 300,000 individuals who were brought to Theresienstadt from all the countries occupied by the Nazis.

A short sketch from the pen of Dr. Hugo H. Schaefer and a picture of Leopold Van Itallie appeared in THIS JOURNAL (12: 754, 1923) on the occasion of the election of the Dutch pharmaceutical scientist as an honorary member of the A. PH. A. This sketch gives a good account of the work done by L. Van Itallie and the honors conferred upon him until 1923. Thirteen years later, at the age of seventy, he retired from the

FAMOUS HONORARY MEMBER OF
A. PH. A. SAVED FROM DEATH AT
HANDS OF NAZIS BY U. S. ARMY

professorship of pharmaceutical chemistry and toxicology at the University of Leyden. He had held the post for twenty-nine years, making this old university of Helmont, de le Boë Sylvius, and Boorhaave fame one of the European meccas of scientific pharmacy. Among the students who flocked to Leyden in order to have the advantage of Leopold Van Itallie's personal instruction was the American pharmacist, Elmer H. Wirth, now professor at the University of Illinois College of Pharmacy.

Throughout his life Leopold Van Itallie has been an ardent advocate of international cooperation. He was instrumental in the founding of the *Fédération Internationale Pharmaceutique*, for a time the president of this federation and for all the time of its existence one of its most efficient driving forces. The idea of an international pharmacopœia found in him its most energetic and influential promoter, and he set much hope in the League of Nations as a means to achieve his goal. The formation, by the Health Organization of the League of Nations, of the Technical Commission of Pharmacopœial Experts in 1937, undoubtedly goes back to the instigation and indefatigable endeavor of Leopold Van Itallie. It was likewise under the auspices of the League of Nations that he did his remarkable work on opium assaying.

It is but natural that so much successful ac-

tivity has been recognized and rewarded. The honorary membership in the A. P. H. A. was only one of many similar honors accorded to him. The academic world, too, showed its recognition by conferring honorary degrees (Paris, Liège). We do not yet know whether the bronze plaque which was placed in the pharmaceutical laboratory of the University of Leyden in his honor has escaped the lust of destruction of the Nazis. But even if not, the memory of a man like L. Van Itallie does not need a monument of bronze or stone. It is perpetuated in his work.



PHILADELPHIA COLLEGE MARKS 125TH ANNIVERSARY

The Philadelphia College of Pharmacy and Science, oldest pharmacy college in America, celebrated the 125th anniversary of its founding at ceremonies held February 22. During the afternoon program, an honorary doctor of science degree was conferred on Dr. George Urdang, honorary member of the AMERICAN PHARMACEUTICAL ASSOCIATION and director of the American Institute of the History of Pharmacy. The honorary doctorate was also received by Paul A. Kind, College trustee and vice-president of the Kind and Knox Gelatin Co.

Speakers were Dr. Urdang and Dr. Roy K. Marshall, director of the Fels Planetarium. Addresses at the evening program were given by Dr. Edward L. Bortz of the University of Pennsylvania; Dr. George D. Beal, chairman of the A. P. H. A. Council and assistant director of Mellon Institute; and Dr. Ivor Griffith, president of the College and member of A. P. H. A.'s Council.

A. S. H. P. PUBLISHES PAPERS FOR HOSPITAL ADMINISTRATORS

To aid hospital administrators in making plans for improved pharmaceutical service, a series of papers on various phases of hospital pharmacy is being published in *Hospitals*, official journal of the American Hospital Association. The project has been arranged by the Program Committee of the American Society of Hospital Pharmacists, with Chairman Evelyn Gray Scott as coordinator.

Dr. Robert P. Fischelis, secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, contributed the initial paper entitled, "The Lengthened

Shadow of the Hospital Pharmacist." Mrs. Scott has presented a discussion on the subject, "Administration of an Effective Pharmacy Requires a Sound Policy;" James P. Jones, of San Francisco discussed "The Hospital Formulary," and Albert P. Lauve, of New Orleans, "Standard Technical Equipment."

The papers tentatively scheduled for forthcoming issues are:

"Out Patient Department" by Donald A. Clarke, New York; "Economics of Hospital Pharmacy" by Paul F. Cole, Chicago; "The Number of Pharmacists in Relation to the Number of Hospital Beds" by Hans S. Hansen, Chicago; "Building or Remodeling the Hospital Pharmacy," for which an author has not yet been selected; "Pharmacy Committee" by Roger P. Marquand, Cleveland; "Parenteral Medication" by Leo and Ann Godley, New York; "Bulk Manufacturing" by Robert Kumpf, New Haven.

In regard to the objective of the series, Chairman Scott expresses the belief that "if the hospital administrator understands what should be demanded or expected from the hospital pharmacy, he will either stand back of the qualified pharmacist or help inaugurate conditions that will place hospital pharmacy service on the proper basis."

Reprints of the published papers will be supplied to the American Society of Hospital Pharmacists by the American Hospital Association.

PHARMACEUTICAL DIRECTORY

The revised and enlarged *Pharmaceutical Directory*, compiled from the records of the AMERICAN PHARMACEUTICAL ASSOCIATION, serves as a quick reference guide to official contacts and sources of information in every branch of the profession. Published on page 183 of this issue of the JOURNAL, the *Directory* will also be available in pamphlet form at ten cents to those who wish a separate copy for desk use. Send orders to the AMERICAN PHARMACEUTICAL ASSOCIATION, 2215 Constitution Ave., Washington 7, D. C.

VETERANS' ADVISORY GROUPS AUTHORIZED FOR STATES

Most state associations have now set up committees on veterans' affairs which will co-operate with field offices of the Veterans' Administration to provide guidance to men returning to civilian pharmaceutical practice or those who wish to complete their education in pharmacy.

In a message to state secretaries on behalf of the Joint Conference of A. Ph. A. and N. A. R. D. executive groups, Dr. Robert P. Fischelis, A. Ph. A. secretary, suggested that each committee on veterans affairs include representation from pharmacy colleges, the state pharmacy board, practicing pharmacists and the state association.

This plan was developed from a resolution of the last joint conference of A. Ph. A. and N. A. R. D. which urged that advisory committees be established if acceptable to the Veterans' Administration. After conferring with Gen. Omar N. Bradley, director of the Veterans' Administration, A. Ph. A. and N. A. R. D. formally presented a proposal to the Veterans' Administration in which it was pointed out that "there are several thousand pharmacy students and partially trained pharmacists who left college or various phases of the pharmaceutical industry in order to serve in the military forces. As these men return to civilian life they will, of course, require some guidance in establishing themselves either as employees of large units in the pharmaceutical industry or as owners and managers of independent pharmacies.

"Those men who require additional education or wish to pursue postgraduate studies or complete their undergraduate work in approved schools of pharmacy may need some assistance in selecting the proper courses and in spending their allowance for education wisely.

"Those men who wish to establish their own pharmacies," the communication explained, "should have guidance from more experienced individuals or organizations with respect to proper locations, the purchase of established pharmacies, and the expenditure of funds secured on loans for the purpose of entering upon the practice of pharmacy on their own account."

Recognizing that the regular facilities of the Veterans' Administration usually would not be prepared to advise on technical professional problems, Gen. Bradley replied that the "Administration fully appreciates the cooperative offer of these organizations and will be very glad to avail itself of the service suggested. . . ."

The state committees participating in the plan will have a relationship to the Veterans' Administration on much the same basis as that of wartime state advisory committees to the state director of Selective Service.

"We are greatly encouraged by the fine co-operation we are receiving from the Veterans' Administration," Dr. Fischelis commented, "and we now have an opportunity to place pharmacy on a high plane in this organization, as well as to help pharmacy veterans and ourselves in meeting the critical problems which confront all of us."

THIOURACIL PRESCRIPTIONS MUST CARRY WARNING

If thiouracil is placed in a prescription container it should be labeled with the warning which appears on the manufacturer's package, the Food and Drug Administration has announced.

Thiouracil carries the warning: "This drug may impair resistance to infection. The physician should be consulted at the first sign of sore throat, fever, or any illness during treatment with thiouracil."

"It is our opinion," said the FDA, "that obliteration, destruction, or removal of this warning from the labeling when the article is received in interstate commerce and dispensed pursuant to a prescription would constitute a violation of the Federal Food, Drug, and Cosmetic Act."

Section 503 of the Law, which provides exemption from certain labeling requirements for prescriptions, does not provide for any exemption concerning adequate warnings of this type, it is pointed out.

A. PH. A. ANNUAL MEETING

The American Pharmaceutical Association and related organizations will hold their annual meeting in Pittsburgh at the William Penn Hotel, August 25 through August 30, the A. Ph. A. Council has just announced. Further details will appear in the June issue.

Science News Capsules

BERIBERI, which kills tens of thousands each year in the Orient besides causing uncounted disabilities, could be eradicated at a cost of little more than ten cents per person per year. Rice, staple food of most Oriental people, loses much of its thiamin during milling and polishing. Answer to the beriberi problem, according to a report published by the National Research Council's food and nutrition board, would be to enrich white rice as our white flour has been enriched.

Age of the universe is now believed to be only slightly more than our earth. A quarter century ago astronomers estimated that the universe had existed for 5 trillion years, as compared with only 2 to 3 billion years for the earth. But modern research cuts the estimated age of the universe to only slightly more than the latter figure.

An all-electronic, general purpose computer, the first ever developed, has made its debut at the University of Pennsylvania. Capable of adding numbers in $1/1000$ second, it will help free scientists from time-consuming calculations. The first problem put on the machine, which would have required an estimated 100 man-years of trained computer's work, was completed in two weeks. Only two hours of this time was spent in electronic computing, the remaining time being devoted to checking and reviewing the results. The computer contains 18,000 electronic tubes.

Streptomycin is living up to its early promise of effectiveness against tularemia, a report of clinical trials at the University of Cincinnati College of Medicine indicates.

Insecticidal aerosol bombs, similar to those used by the Army, are expected to be in plentiful supply this summer. The formula used by the military is: 3% DDT, 2% of a 20% pyrethrum concentrate, 5% cyclohexanone, 5% lubricating oil, and 85% Freon gas as the vehicle. Prices are dropping sharply.



Rutin, a drug similar in chemical structure to vitamin P, has proved effective in reducing increased capillary fragility and may be commercially available yet this year.

Glareless glass, developed during the war for military optical instruments, is now being put to civilian uses. Chemical coatings are used for this purpose, a method far more useful than etching and

other techniques previously tried. A 60% increase in light transmission by binoculars, and increased lens speed and fewer false images as applied to camera lenses have resulted from use of the treated glass.

Mycocidin, obtained from one of the *Aspergillaceae*, is the latest of the drugs found to be effective against tuberculosis bacteria in the test tube. As yet, none have shown striking promise clinically.



A two-ton glass working lathe, the world's largest, has been completed for use in producing super-voltage tubes for X-ray and betatron machines.

A record for broken marriages will probably be set this year. Fragmentary reports for 1945 indicate that the divorce rate last year had already increased sharply to hit a new high. Estimates for 1944 put the divorce rate that year two-fifths above the rate for 1938, according to the statistical bureau of the Metropolitan Life Insurance Co.

Niacin can be synthesized more cheaply by a process which starts with 5,7-dinitro-8-quinolinol, according to patent claims (No. 2,394,650) filed by Adolph Zimmerli, Highland Park (N. J.) chemist.

Mysterious element in the sun, never found on earth, is apparently also present in the new exploding star, T Coronae Borealis. As the modern theory of atomic structure leaves no place for such an unknown element, the "impossible" green line observed in the spectrum may be due to some known substance which shines in a peculiar way under special physical conditions prevalent in the sun's corona and in the nova.

More effective use of plastics will result from a long-range research program on fundamental engineering problems to be undertaken at M. I. T. The project is sponsored by the Plastics Materials Manufacturers Association.

Radioactive krypton, rare inert gas produced in the cyclotron, has been developed for the diagnosis and study of vascular diseases such as hardening of the arteries, trench foot and Burger's disease. Credit for this new technique goes to University of California scientists. Effects of certain drugs—such as adrenalin and histamine—on the circulatory system are also being studied by using the "tracer" method to follow the physiologic journeys of radio-

active krypton inhaled in conjunction with drug administration.

Match-box size radios utilize radio construction techniques developed for the proximity fuze. "Printed wire" reduces wiring of radio circuits to a two-dimensional lithographic process. A solution of finely divided silver is painted onto a ceramic plate by a roller which passes over a stencil of the wiring circuit. The hardened silver produces a silver wiring circuit instead of the usual copper wires. Resistors are painted in over another stencil with a solution of carbon. Condensers and midjet tubes are then soldered to the circuit.



Neurosurgery is reported as the most effective method of arresting the pernicious, progressive type of hypertensive disease. Cures are not claimed but, used in cases where indicated, the operation promotes improvement and increased life span.

"Sleeping sickness" viruses from the Orient, Africa and South America may be transplanted to the U. S. due to the mass movements of men over the world, epidemiologists in the Hooper Foundation of the University of California warn. Their experiments show that at least one, the deadly Japanese "B" type, can be transmitted and propagated in the same manner as those now here. One such virus has recently migrated from South America to Trinidad.

Simmond's disease, a rare illness and rarely treated successfully, has yielded to testosterone in two cases treated at the University of California Medical School. The treatment recently restored general health and lost sexual function in a male youth whose pituitary gland had been destroyed in an accident.

Typhoid fever and diphtheria are ravaging most of Europe in a postwar epidemic wave that recalls the typhus fever epidemic in eastern Europe following the first World War. Only improved living conditions with restoration of safe water supplies are expected to check the typhoid which UNRRA reports 15 to 30 times more prevalent in central Europe than before the war.

Television broadcasting from relay stations carried aloft in blimps is proposed, with experimental equipment already in use. A similar plan calls for the use of planes flying in lazy circles high above the earth. Since television waves rarely reach beyond the horizon the airborne relay stations would greatly reduce the number of stations necessary if located on the ground. Long-distance transmission over coaxial cables is practical but expensive.

Television cameras will be put to an unusual use this summer at Bikini Atoll, where they will transmit to distant observers an on-the-spot view of experimental atomic bombing of ships. Another in-

teresting sidelight of the experiments is the announcement that animals will be aboard the bombed ships to test biologic reactions to the explosion.

Motherless male insects have been produced at the University of Pennsylvania. Female insects were treated before mating with heavy ultraviolet irradiation. This destroyed or disabled the heredity-bearing chromosomes in their still-unfertilized eggs. When they were subsequently mated with males and the eggs thus fertilized, nothing but male chromosomes were available to form the essential parts of the new nuclei. So the new insects grew up with no trace of maternal heredity—their characters were all derived from the male parents. This is the first known instance of growth to full maturity of motherless individuals from irradiated eggs and the technique is expected to have scientific value in heredity studies.

Congenital malformations in children whose mothers had German measles early in pregnancy may not occur with unusual frequency as had been feared. A study of rubella cases recorded at the Milwaukee health department does not seem to bear out earlier reports of a correlation between the disease and malformations. Physicians have been urged to survey records elsewhere for more statistical evidence.

Side-show freaks who have "turned to stone" suffer from scleroderma, a disease which has been successfully treated in one case with dihydrotachysterol. The chemical is closely related to vitamin D and exerts a powerful effect on calcium utilization in the body. Cause of the disease remains unknown but calcium metabolism is disturbed, increasing the amount of calcium in the skin by about 30% in some patients.

Agranulocytosis has yielded to penicillin in a patient who developed the often-fatal disease while being treated with gold salts for chronic rheumatism. Similar results have been achieved in cases precipitated by use of thiouracil. These findings have important implications since agranulocytosis has been a serious complication of various types of therapy. Penicillin acts as a temporary substitute for the leukocytes, holding invading bacteria in check until the bone marrow can again replenish the supply of blood cells.

(Condensed from Science Service)

RETAIL PHARMACY ADVERTISING

A series of institutional newspaper advertisements for the retail pharmacist is being made available to one pharmacist in each community by Metro Associated Services, 275 Seventh Ave., New York 1. Meanwhile, in Chicago, the newly organized National Ad Service at 130 N. Wells St. has announced establishment of a similar service for the independent pharmacist on an exclusive franchise basis.

NVR

PRODUCTS RECENTLY ACCEPTED BY THE
A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY

Council descriptions of drug products are published regularly in *This Journal* as they are accepted. Rules upon which the Council bases its action appeared in the November, 1945 issue (6: 329, 1945) and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago 10.

CONTRACEPTIVE JELLIES AND CREAMS

(See New and Nonofficial Remedies, 1945, p. 355).

The following article has now been accepted:

HOLLAND-RANTOS CO., INC., NEW YORK

U. S. trademark 213,756.

Koromex Jelly: A water-soluble jelly formed from tragacanth and gum acacia having a pH of 4.6, prepared from the formula:

	Per Cent
Boric acid.....	2.0
Oxyquinoline benzoate.....	0.02
Phenylmercuric acetate.....	0.02
Glycerin.....	10.0
Gum acacia.....	0.6
Tragacanth.....	2.5
Perfume.....	0.015
Butyl parahydroxybenzoate as preservative.....	0.02
Water.....	100

Actions and Uses.—See article Contraceptive Jellies and Creams.

Dosage.—5 cc.

SYRINGE APPLICATORS FOR CONTRACEPTIVE JELLIES AND CREAMS

(See New and Nonofficial Remedies, 1945, p. 357).

The following article has been accepted:

HOLLAND-RANTOS CO., INC., NEW YORK

Koromex Vaginal Applicator: A transparent plastic tube threaded at the blunt, intravaginal end, to screw onto tubes of Koromex Jelly to permit filling by compression of the tube. The full capacity is 5 cc., the recommended dose.

ACETARSONE (See New and Nonofficial Remedies, 1945, p. 235).

The following dosage form has been accepted:

ALLEN LABORATORIES, INC., PALMER, MASS.

Allen Brand Tampon with Acetarsonone (Stovarol): A lightly compressed stitched tampon of absorbent cotton, coated with 0.1 Gm. of powdered acetarsonone, to which is attached a tablet consisting of acetarsonone 32 mg. in a tablet base composed of lactose, dextrose, boric acid and starch with a small quantity of sodium bicarbonate and tartaric acid to aid disintegration.

Actions and Uses.—(See article on Acetarsonone.)

Dosage.—Intravaginally, one tampon tablet every other day or daily, followed by a mildly acid douche after a third treatment or after a week's treatment, has been reported to give satisfactory results.

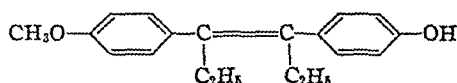
THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 610).

The following dosage form has been accepted:

FREDERICK STEARNS & CO., DETROIT

Tablets Thiamine Hydrochloride: 3 mg.

MONOMESTROL.—Mestilbol.—Diethylstilbestrol monomethyl ether.—3-*p*-Hydroxyphenyl-4-*p*-methoxyphenyl-3-hexene. — α, α' -Diethyl-4'-methoxy-4-stilbenol.— $C_{18}H_{22}O_2$ (Molecular weight 282.37). Monomestrol may be represented by the following structural formula:



It may be prepared by methylation of diethylstilbestrol or by partial demethylation of the dimethyl ether of diethylstilbestrol. The crude product may be purified by distillation in vacuum and recrystallization from water-alcohol or from benzene-petroleum ether mixtures.

Actions and Uses.—Monomestrol is used for the same conditions for which estrogenic substances are employed, and the contraindications are essentially the same. Like other estrogens, it must be individualized since each patient presents special problems. Patients undergoing treatment should remain under constant medical supervision. Side effects are rare, but when they do occur they are usually milk, although in a few instances it may be necessary to reduce the dosage temporarily.

Dosage.—The average oral dose for the treatment of menopausal symptoms is 0.5 to 1 mg. daily by mouth, although if necessary 10 to 25 mg. may be given parenterally biweekly. Dosage for atrophic genital disorders such as kraurosis vulvae include 1 to 5 mg. daily by mouth or 25 mg. weekly by parenteral injection; for gonorrheal vaginitis of children 0.25 mg. daily; for the prevention of breast engorgement 5 to 10 mg. daily or 25 mg. the first and third days by injection; for suppression of lactation 10 mg. two or three times daily, or 25 mg. daily by injection; for prostatic cancer 2.5 mg. three times daily by mouth. The duration of treatment varies and may last for several months or even two or three years in the treatment of the menopause, a few weeks for gonorrheal vaginitis in children, a few months for atrophic genital disorders, three to five days for prevention of breast engorgement and suppression of lactation or be continuous for prostatic cancer.

Tests and Standards.—

~ Monomestrol occurs as an odorless, white, crystalline powder, which melts at 116–117.5 C. when recrystallized from benzene-petroleum ether (112–114 C., when recrystallized from alcohol). It is soluble in alcohol, freely soluble in acetone and in ether and practically insoluble in water, in dilute

mineral acids and in dilute aqueous solutions of sodium and potassium hydroxide. It may be dissolved in vegetable oils and in dilute solutions of sodium or potassium hydroxide in 50 per cent ethanol.

To 1 mg. of monomestrol dissolved in 5 cc. of alcoholic potassium hydroxide add diluted hydrochloric acid to neutralize the solution and then add 1 cc. in excess. Add 1 cc. of molybdophosphotungstate reagent and shake. Allow to stand ten minutes, dilute to 25 cc. with water and add 5 cc. of saturated sodium carbonate solution: a blue color develops on standing. Add a few drops of 50 per cent solution of antimony pentachloride in dry alcohol-free chloroform to a dilute solution of monomestrol in the same solvent: a red colored solution is produced which changes rapidly to purple (*distinction from hexestrol, which gives no color*).

Dissolve 10 mg. of monomestrol in 5 cc. of concentrated sulfuric acid: an orange color is produced which disappears on dilution with water (*distinction from hexestrol and benzestrol, which give no color*).

Dry an accurately weighed specimen of monomestrol at 100 C. for four hours: the loss does not exceed 0.5 per cent. Ignite an accurately weighed specimen of monomestrol after the addition of concentrated sulfuric acid: the sulfated ash residue is not more than 1 per cent.

Transfer 0.1 Gm. of monomestrol to a 100 cc. volumetric flask and dilute to the mark with carbon tetrachloride. Transfer 10 cc. of the solution to a 250 cc. iodine flask fitted with an accurately ground stopper; add the calculated quantity plus 1 cc. of tenth-normal bromide-bromate solution (prepared according to the U. S. P. XII, p. 749); wash the walls of the flask and wet the stopper by the addition of 10 cc. of distilled water. Quickly add 10 cc. of 10 per cent hydrochloric acid and insert the wet stopper. Shake the mixture thoroughly for several minutes, then set aside in the dark at 30 C. and shake intermittently for exactly fifty minutes. At the end of this period place 2 cc. of 40 per cent potassium iodide solution around the stopper. Remove the stopper just enough to allow the potassium iodide solution to enter the flask, shake thoroughly, rinse the stopper and sides of the flask with distilled water, add 25 cc. of carbon tetrachloride and titrate with fiftieth-normal sodium thiosulfate to the disappearance of the pink color in the carbon tetrachloride. Each cubic centimeter of tenth-normal bromide-bromate solution is equivalent to 4.706 mg. of monomestrol. The monomestrol content is not less than 99 per cent. *The nature of the reaction between iromine and monomestrol leads to complications unless the conditions of a given procedure are strictly observed. This method of standardization must be considered tentative until more accurate analytic procedures are available.*

The following dosage forms have been accepted:

WALLACE & TIERNAN PRODUCTS, INC., BELLEVILLE, N. J.

Tablets Monomestrol: 0.25 mg., 0.5 mg., 1.0 mg., 2.5 mg. and 5.0 mg.

Solution Monomestrol 10 mg. and 25 mg. per cc. (in Sesame Oil): 1 cc. ampuls.

PROCAINE HYDROCHLORIDE (See New and non-official Remedies, 1945, p. 97).

The following dosage form has been accepted:

GEORGE A. BREON & Co., INC., KANSAS CITY, MO.

Solution Procaine Hydrochloride 2% W/V: 30 cc. vials. Each cubic centimeter contains 20 mg. procaine hydrochloride in isotonic solution of sodium chloride with chlorobutanol 0.5 per cent as a preservative.

PERTUSSIS VACCINE COMBINED WITH DIPHTHERIA TOXOID (See THE [A. M. A.] JOURNAL, Jan. 5, 1946, p. 31).

The following dosage form has been accepted:

PARKE, DAVIS & Co., DETROIT

Diphtheria Toxoid-Pertussis Vaccine Mixed (Sauer): 6 cc. vials (one immunization) and 24 cc. vials (four immunizations).

LAMBDA KAPPA SIGMA MEETS

Lambda Kappa Sigma, national pharmacy sorority, will hold its 1946 convention in Portland, Ore., June 22 to 26. This will be the first meeting of the organization's 26 chapters since 1940.

A. Ph. A.

Branches

NORTHERN CALIFORNIA BRANCH—Rapid transportation to the hospital area; blood substitutes and sulfonamides; and a good hospital staff were described as the most important factors in caring for the wounded, by Dr. T. Eric Reynolds in an address before the Northern California branch. Dr. Reynolds, who served as a captain on Admiral Halsey's staff in the South Pacific, gave an interesting description of the difficulties encountered by his unit in landing on the islands to establish hospitals, and the trying conditions under which patients were treated. He praised the marvelous assistance given to the medical staff by the Pharmacists Mates who in a majority of cases, were pharmacists. While in Japan, Dr. Reynolds had the opportunity to visit the pharmacy schools and found them to be excellent.

The meeting, arranged and conducted by the East Bay members, was exceptionally well attended. Louis Fischl and Eugene Sbarbaro were in charge of arrangements. Dr. T. C. Daniels, dean of the College of Pharmacy, University of California, gave a brief talk on the importance of the AMERICAN PHARMACEUTICAL ASSOCIATION.

CHICAGO—The local branch celebrated its 300th meeting on December 18th with a dinner at the Chicago Illini Union Building of the University of Illinois. A. Ph. A. Secretary Robert P. Fischelis, guest of honor, addressed the members on the history, work and aims of the ASSOCIATION. The meeting was the first of three having representatives of societies of the health professions as speakers.

PHILADELPHIA—"Malaria" was discussed at the January meeting by the principal speaker, Dr. Justus B. Rice, vice-president in charge of research of the Winthrop Chemical Co. In reviewing the history of malaria, the speaker pointed out that the disease has helped destroy a number of civilizations and has affected the outcome of many wars. Dr. Rice proceeded to discuss the etiology of malaria and therapy, including new drugs developed during the war.

The branch secretary, John E. Kramer, read a bulletin announcing the temporary cancellation of Civil Service examinations for pharmacists due to adoption of higher standards, and a reply from the Army Surgeon General's office concerning the Pharmacy Corps.

NORTHERN CALIFORNIA—New officers for 1946 are Paul Marcucci, president; Charles

Shalz, vice-president; James Staven, secretary; and Eugene Sbarbaro, treasurer. Those elected to the Board of Directors were Dr. T. C. Daniels, Carl Tasker and Francis Spinelli.

At a recent meeting Dr. H. S. McCorkle of the University of California spoke on "Research and Clinical Use of Penicillin."

NORTHWESTERN—At a well-attended session, Dr. Frederick J. Wulling, dean emeritus of the University of Minnesota College of Pharmacy, delivered the third Melendy Memorial Lecture. He recounted many personal experiences with outstanding pharmaceutical figures of bygone years.

NORTHWESTERN OHIO—Dr. A. A. Brindley, Toledo physician, addressed the January local branch meeting on Federal health insurance. Opposing the Wagner-Murray bill now before Congress, Dr. Brindley urged members to take action to defeat the legislation.

Dr. George L. Baker, who aided in training pharmacist's mates during the war, described the Navy course and expressed the belief that many pharmacist's mates hope to become registered pharmacists without further training when discharged. Although recognizing the excellent work of the men at the battle fronts, Dr. Baker pointed out that they lack professional training for the practice of pharmacy and warned against lowering of professional standards.

NEW YORK—Dr. Charles H. Mann, chief of Squibb's Department of Professional Relations, spoke at the January meeting on "The Present Status of Penicillin, Streptomycin and Other Antibiotics."

In submitting the report of the Education and Legislation Committee, Samuel A. Dreyer reported that the proposed N. Y. City barbiturate regulations were not to be acted upon by authorities pending the enactment of state legislation.

NORTH PACIFIC—The following officers have been elected by the branch for 1946: Harvey Donnell, president; L. C. Britt, first vice-president; William Bush, second vice-president; and Fred A. Geue, secretary-treasurer. The branch has launched a program to raise funds for purchasing equipment for a modern manufacturing laboratory at the Oregon School of Pharmacy.

ST. JOHN'S COLLEGE—Dr. Louis J. Neff of the American Cancer Society addressed the student branch members at the January meeting. In discussing the problems of cancer control and treatment, he pointed out that the pharmacy is an outlet for helpful information to the community and may help promote control of the disease.

During the business session, A. P. H. A. circulars on the Remington Medal award and the barbiturate conference were read. Miss Lydia Schick presented a paper on standards of the modern pharmacy, with reference to the discussion by J. W. Snowden in the December issue of the JOURNAL.

Typical Days

FROM THE SECRETARY'S FEBRUARY DIARY

—1st—

TODAY joined Dr. Powers in receiving U. S. P. Chairman E. F. Cook and Adley Nichols, U. S. P. trustees' secretary who came to discuss problems of mutual interest to N. F. and U. S. P., at Headquarters, and later at lunch at the Roger Smith. And there was no difficulty in achieving a meeting of the minds. Later a call by telephone from Jack Purinton, who now goes to G. D. Searles to manage production after successfully guarding the interests of the Surgeon General of the Army in the Drug Requirements Committee.

—2nd—

A Saturday morning conference with Justin Powers on many problems and then a bee-line for the train to Trenton, where routine business was disposed of before journeying to Red Bank for a short week-end.

—3rd—

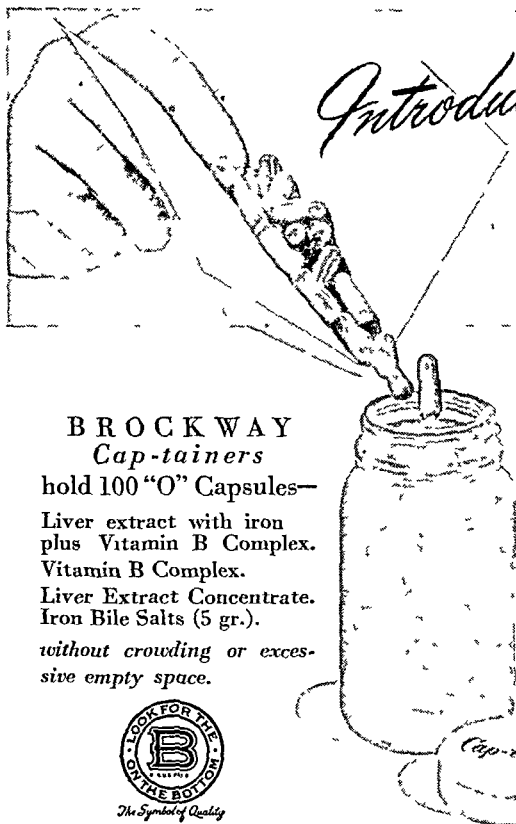
A part of this Sunday given over to the special meeting of the Conference of Allied Medical Professions of N. J., which had been called to prepare argument against a bill pending in the legislature which would abolish the State Board of Health and substitute a Council without specific representation for the various professions; and the Conference considered this a step backward, filing a brief with the proper committees of the legislature, setting forth its views in no uncertain terms.

—4th—

An early morning start for Providence, R. I., to investigate facilities for the next convention which the ASSOCIATION decided two years ago should go to this New England city. All the afternoon with Miss Bennett, Biltmore Hotel convention manager; Dean Rivard; and Charles F. Gilson, looking over the meeting facilities of the hotel, and later to dinner, sampling the convention menus and entertainment provided in the Garden Restaurant and The Bacchante, and decided everything would probably pass muster, for there was entertainment of a kind to suit those who may come from the interior, as well as sophisticated New Yorkers.

—5th—

Off to an early start by rail to Boston, arriving within an hour and going straight to the Statler for more "convention shopping" and later to luncheon with Dean Newton and members of the Massachusetts College of Pharmacy faculty at the College building. After brief conferences with Dean New-



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ton, Professors Youngken, Kelly, Lynn and others, decided that if conditions in Providence failed to materialize to the satisfaction of the Council, Boston might fill the bill. But conversation with Copley Plaza and Statler Hotel officials brings out that they are long on service but short on available dates. Martin Adamo and Sam Silverman of the Massachusetts Pharmaceutical Association will step into the breach, if necessary.

—6th—

Up in time to leave Boston for Worcester on the B & A at 8 o'clock, with Adamo, Silverman and other Bostonians, bound for the mid-winter meeting of the Massachusetts Pharmaceutical Association. At Worcester, found many an early bird at the Sheraton Hotel ready to take part in the business of an important and well-attended meeting. Promptly at 10:30 a. m. Willard Chagnon sounded the gavel and routine business was promptly cleared to give us an early opportunity to address the assembled multitude on "Pharmacy in the Affairs of the Nation." It was particularly pleasing to endorse Gen. Omar Bradley and his capable Surgeon General, Paul R. Hawley, who had been attacked in the newspapers by the national commander of the American Legion—quite unjustly, to our way of thinking. This became front-page news in the afternoon paper. Left Worcester on the 1:20 p. m. train for New York

after exchanging greetings with many old and new friends including Anita DesRochers, New Hampshire Pharmaceutical Association treasurer; George Archambault, now heading the professional service activities of the Liggett Company; Frank East William Briry, and many others. Reached New York late, but in time for the 7:30 to Washington

—8th—

A welcome visitor was Capt. Arnold Singer, just in from India, where he had served capably for several years as bacteriologist in the Sanitary Corps with opportunity to experience infections on his own account; now ready to take on new responsibilities in New Jersey. An early afternoon conference with Army Surgeon-General Norman Kirk, Colonels Michaelis and Kintz, Major Aabel and Captain Wilson on the future of the Pharmacy Corps—a frank and free discussion.

Later with Major Aabel at our office discussing pharmacy's place in the Army, and finding much food for thought in his experiences as a member of the M. A. C. Like many another good pharmacist, this Minnesota graduate did not see service in the Pharmacy Corps.

—11th—

This morning a very worth-while conference with Assistant Dean R. B. Smith of the Medical College of Virginia School of Pharmacy, who heads the

A. A. C. P. Committee on Pan American Conference. Took him with Dr. Powers to meet Dr. Kelchner, head of the Division of International Conferences at the State Department where the preliminaries for arranging a Pan American Conference on Pharmacy were thoroughly explored. Following luncheon at the Roger Smith Hotel, a final conference on the subject at Headquarters, and it looks as though we are on our way toward some worth-while program as part of the Good Neighbor policy.

—12th—

A visit from Dr. Jean Mabilleau of the French Public Health Mission for the discussion of future cooperation between French and American pharmacists, and then to lunch with George Hammill at the Roger Smith, where many phases of the surplus property program were discussed. Also, this being Lincoln's birthday it was well to recall amid the tumult and shouting of postwar that we have fought so "Government of the people, by the people and for the people shall not perish from the earth."

—13th—

Early to the office to dispose of routine mail, and then joined Dr. Powers on the way to New York, where he will attend Contact Committee and U. S. P. meetings for the balance of the week. Alighted at Trenton to meet with the New Jersey State Board of Health before which appeared one delegation to ad-

vocate compulsory enrichment of flour within the state, and others to settle disputes on the routing of sewage disposal facilities. Later to confer with Pharmacy Board Secretary Powers on problems involving issuance of pharmacy permits to firms with questionable qualifications, and then back to Washington.

—14th—

All day at the routine grind and preparations for the meeting of the Committee on Status of Pharmacists in the Government Service at Headquarters tomorrow. To dinner at the Washington with McCartney, DuMez, Swain and Kendig, all here for tomorrow's meeting and for the preliminary session tonight in which Congressman Durham, George Frates and Arthur Einbeck joined.

—15th—

Attending the meeting of the Committee on Status of Pharmacists in the Government Service in the reading room of the Headquarters Building with Swain, Frates, DuMez, D. B. R. Johnson, H. S. Johnson, Rogers, McCartney, Einbeck and Kendig in attendance and Dargavel, Lusby, Winne and Bohrer absent. Promptly at 11 a. m. came Surgeon-General Kirk and staff to join the meeting and confer on problems of pharmacy in the Army [outlined on page 155]. It was an historic occasion, well worth the efforts of both groups, and should lead to



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a much better understanding of the fundamentals as well as the details of the problem. After a brief session at the office to dispose of the mail and other routine, to dinner with DuMez, Rogers and D. B. R. Johnson at the Madrilion, followed by long discussions of this and that at the hotel.

—16th—

Most of the morning carrying out instructions of the Committee on Status of Pharmacists in the Government Service arrived at the day before, and then accompanied by Dean Rogers to spend the week end at Red Bank.

—18th—

The heavy Monday morning routine and disposal of mail interrupted by emergency calls from Richmond, Va., where help was needed on pending legislation to provide for the addition of a pharmacist to the State Board of Health, and Pat Costello's summary on this subject in the last Proceedings of the N. A. B. P. arrived just in time to be of considerable use.

—19th—

To luncheon with Drs. H. Van Zile Hyde and L. L. Williams, discussing many details of pharmaceutical implications and international drug standards in connection with the proposed International Health Conference of U. N. O. Among the visitors a call from Lt. Catherine Simon, about to leave the Waves to sail into a pharmaceutical career with some manufacturing firm. To dinner at the Statler with P. D.'s Homer Fritch, leaving with a better idea of many problems now engaging manufacturers, especially in the field of antibiotics.

—20th—

Among the long distance calls came one from Russell Rothrock of Indiana citing Hoosier needs for registered pharmacists now whiling away precious hours in the Navy. To lunch with Bob Gasen, now of Bristol Laboratories, and at night to the Press Club for dinner with Wallace Werble, discussing many current problems and listening to his ideas about the effect of traffic in sales outlets other than pharmacies on distribution of drugs through pharmacies.

—22nd—

On this birthday of George Washington with the office closed, there was opportunity to catch up on some routine before leaving at 1 p. m. for Philadelphia to join in the 125th anniversary celebration of the founding of the oldest college of pharmacy in the United States, and there were Beal, Urdang, Griffith, Cook, Kramer, Sappia, Ulan, Dean Crawford and others with whom to converse. Between the afternoon exercises, at which Urdang received the honorary Sc.D. and spoke on the Quaker influence on science, and the dinner at 6:30 a long conference with Chairman Beal of the Council on pending problems.

—25th—

Much routine business at the office, including the designing of a new Life Membership certificate.

—26th—

At last some action on the final preparation of a torero room for supplies with perpetual inventory arrangements. In the afternoon came Emeritus President Elliott of Purdue to discuss the survey of pharmacy and pharmaceutical education to be undertaken by the American Council on Education, and it is always a pleasure to attempt to educate the educated with respect to pharmacy because the ramifications of drug manufacture and distribution are always fascinating to men in other walks of life. At dinner with J. J. Clarke of United Drug and Ligaret, and much conversation on the drug surplus situation.

—27th—

And now the painters actively applying a first coat to each office in this handsome building, with some inconvenience but noting with pleasure what a coat of paint can do to walls and ceilings grown dark with the years. All the afternoon with Einbeck, DuMez and Frates of the Pharmacy Corps Steering Committee composing a communication to the Surgeon-General and getting it into the mill to the committee at large for approval. Distressed to receive a wire announcing death of E. R. Outcalt, deputy secretary of the N. J. State Board of Health, who carried the load of the Department to a greater extent than generally known, thereby hastening his end at fifty-two, which gives one pause.

—28th—

A full staff meeting this afternoon to explain many new developments in the ASSOCIATION's activities and ask continued cooperation in the very difficult days ahead. Later a visit from J. S. Morrell to discuss surplus property problems as handled by the U. S. Public Health Service for institutions engaged in health activities and so another month completed.

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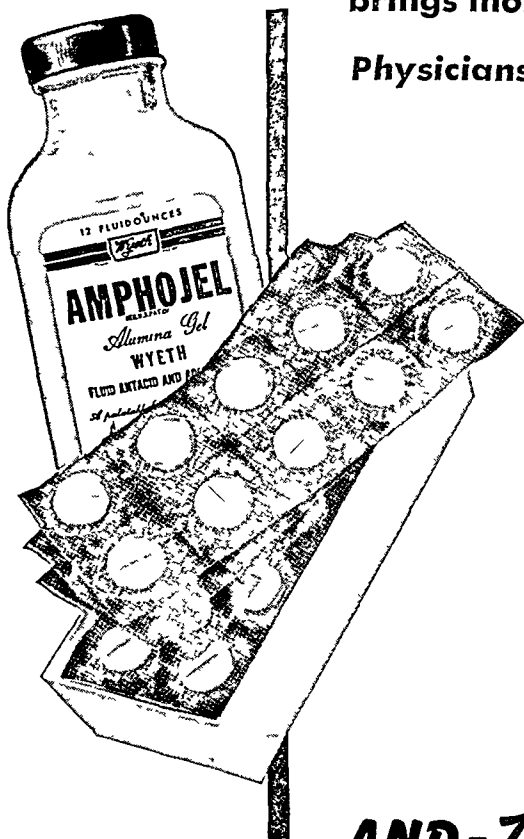


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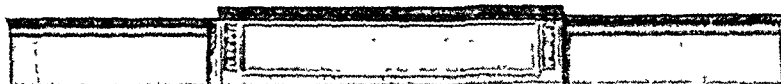
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Membership Mrs L D Hiner, Columbus, Ohio

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(1949), C O Lee, Lafayette, Ind. (1948), E. A. Brecht,
Chapel Hill, N. C. (1947), J. B. Fullerton, Kalamazoo,
Mich. (1946); P. L. Black, Baltimore, Md. (1945); H. H.

Schaefer, Brooklyn, N. Y. (1954); F. E. Bibbins, Indianapolis, Ind. (1953); E. H. Wirth, Chicago, Ill. (1952); R. A. Deno, Newark, N. J. (1950); H. B. Haag, Richmond, Va. (1951).

Committee on Recipe Book.—*Chairman*, Melvin W. Green, Washington, D. C. (1949); G. C. Schicks, Newark, N. J. (1950); R. E. Terry, Chicago, Ill. (1945); M. A. Chehak, Cedar Rapids, Iowa (1948); F. D. Lascoff, New York City (1948); F. E. Bibbins, Indianapolis, Ind. (1949).

Committee on Pharmaceutical Research.—*Chairman*, Ivor Griffith, Philadelphia, Pa. (1948); Ernest Little, Newark, N. J. (1948); G. L. Jenkins, Lafayette, Ind. (1947); H. W. Youngken, Boston, Mass. (1946); B. V. Christensen, Columbus, Ohio (1947); L. W. Rowe, Detroit, Mich. (1946); J. C. Krantz, Jr., Baltimore, Md. (1945); E. N. Gathercoal, Pentwater, Mich. (1945). *Associate Members*, E. F. Cook, Philadelphia, Pa.; J. L. Powers, Washington, D. C.; L. W. Hazleton, Washington, D. C.; H. H. Schaefer, Brooklyn, N. Y.; Robert P. Fischelis, Washington, D. C.

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Committee on U. S. Pharmacopœia.—*Chairman*, C. L. O'Connell, Pittsburgh, Pa. (1948); A. F. Schlichting, St. Louis, Mo. (1948); E. H. Wirth, Chicago, Ill. (1946); W. J. Husa, Gainesville, Fla. (1947); W. F. Rudd, Richmond, Va. (1949); F. O. Taylor, Detroit, Mich. (1950); L. D. Hiner, Columbus, Ohio (1951); J. L. Hayman, Morgantown, W. Va. (1952); Arthur E. James, West Chester, Pa. (1953); John H. Greenaway, Portsmouth, N. H. (1954).

Committee on Pharmaceutical Syllabus.—R. A. Deno, Newark, N. J. (1945); H. C. Muldoon, Pittsburgh, Pa. (1946); E. D. Stanley, Madison, Wis. (1947); A. H. Uhl, Madison, Wis. (1948); E. R. Series, Chicago, Ill. (1949); L. F. Tice, Philadelphia, Pa. (1950). (This committee is a part of the National Committee on Pharmaceutical Syllabus; other members appointed by A. A. C. P. and N. A. B. P.)

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American Professional Pharmacist	John N. McDonnell, 67 Wall St., New York 5, N. Y.	N. A. R. D. Journal	Theodore Christjanson, 205 W. Wacker Drive, Chicago, Ill.
Cosmetic & Drug Preview	Harold Hutchins, 347 Madison Ave., New York 17, N. Y.	Oil, Paint & Drug Reporter	Hugh Craig, 59 John St., New York, N. Y.
Drug Topics and Drug Trade News	Robert L. Swain, 330 W. 42nd St., New York 18, N. Y.	The Drug & Cosmetic Industry	Thomas Farrell, 101 W. 31st St., New York, N. Y.
Drug Vitamin and Allied Industries	O. J. Willoughby, 1070 Spring St., N. W., Atlanta, Ga.		

SECTIONAL, STATE AND LOCAL PUBLICATIONS

NAME	EDITOR OR MANAGER	NAME	EDITOR OR MANAGER
Allegheny County Pharmacist	Carl Auel, 624 Bessemer Bldg., Pittsburgh, Pa.	New Jersey Journal of Pharmacy	John J. Debus, 28 W. State Street, Trenton, N. J.
Apothecary	John L. Heaton, 376 Boylston St., Boston 16, Mass.	New York State Pharmacist	Curt P. Wimmer, 1261 Broadway, New York, N. Y.
Arkansas Druggist	Ray McSpadden, 217 East Third St., Little Rock, Ark.	Northwestern Druggist	J. B. Slocumb, 2642 University Ave., St. Paul, Minn.
C. R. D. A. News	John M. Myers, 32 W. Randolph St., Chicago, Ill.	Northern California Drug News	Walter Gnerich, 904 Cunard Bldg., San Francisco, Calif.
Carolina Journal of Pharmacy	W. J. Smith, Chapel Hill, N. C.	Northern Ohio Druggist	John C. Levy, 1935 Euclid Ave., Cleveland, O.
Connecticut Pharmacist	Wilbur L. Davidson, 20 Lake Place, New Haven, Conn.	Ohio Valley Druggists Association	Harold C. Freking, 1014 Race St., Cincinnati, O.
Delaware County Pharmacist	Abraham Lachman, P. O. Box No. 1, Ridley Park, Pa.	Oklahoma Pharmacist	Stillwater, Okla.
Drug Progress	Joseph J. Shine, Suite 1118, 77 W. Washington St., Chicago, Ill.	P. A. R. D. Bulletin	Hyman Bogash, 2017 Spring Garden St., Philadelphia, Pa.
Indiana Pharmacist	Harold V. Darnell, 710 Test Bldg., Indianapolis, Ind.	Pacific Drug Review	F. C. Felter, 504 Woodlark Bldg., Portland, Ore.
Journal of the Florida Pharmaceutical Association	R. O. Richards, Fort Myers, Fla.	Pennsylvania Pharmacist	C. E. Rickard, 600 N. 2nd St., Harrisburg, Pa.
K. P. A. News	Clara B. Miller, 824 Kansas Ave., Topeka, Kans.	Rocky Mountain Druggist	Chas. J. Clayton, 1441 Welton St., Denver 2, Colo.
Kentucky Pharmacist	E. M. Josey, 213 St. Clair St., Frankfort, Ky.	St. Louis Retail Druggists' News	Herm. P. Winkelmann, 6710 Leona, St. Louis, Mo.
Louisiana Pharmacist	John F. McCloskey, 2935 Calhoun St., New Orleans 15, La.	Southeastern Drug Journal	Russell D. Rainey, 306 Bona Allen Bldg., Atlanta, Ga.
Maryland Pharmacist	Melville Strassburger, 10 W. Chase St., Baltimore, Md.	Southern Pharmaceutical Journal	Walter Cousins, Jr., 911 Insurance Bldg., Dallas, Texas
Michigan Journal	Roland T. Lakey, 1208 Francis Palms Bldg., Detroit.	Texas Druggist	Robert G. Dillard, 503 Littlefield Bldg., Austin, Texas
Midwestern Druggist	J. Will Kelley, 608 New York Life Bldg., Kansas City, Mo.	Virginia Pharmacist	A. L. I. Winne and W. F. Rudd, 400 Travelers Bldg., Richmond 19, Va.
Missouri Pharmacist	O. R. Sutton, 309 Central Trust Bldg., Jefferson City, Mo.	West Coast Druggist	Bert Butterworth, 1606 N. Highland Ave., Hollywood, Calif.
National Capital Pharmacist	A. C. Taylor, 77 P Street, N.E., Washington, D. C.	Wisconsin Druggist	Jennings Murphy, 625 N. Milwaukee St., Milwaukee, Wis.
Nebraska Mortar & Pestle	Cora Mae Briggs, 410 Federal Securities Bldg., Lincoln 8.		



Opportunities in PHARMACY

are greater than ever for young men and women receiving training in Pharmacy and the allied fields of Chemistry, Bacteriology, and Biology. The demands upon the professions in the postwar world would insure interesting and successful careers. B.Sc., M.Sc., and D.Sc. degree courses. Inquiries from returning Servicemen invited. Write for catalog.

Philadelphia College OF PHARMACY AND SCIENCE

43rd Street, Kingsessing and Woodland Avenues, Philadelphia 4, Pa.

Journal of the

AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VII, NO. 5

MAY, 1946

CONSECUTIVE NO. 9

*Practical
Pharmacy
Edition*

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COVER: Pharmacist Charles W. Whitebread, curator of the Division of Medicine and Public Health at the U. S. National Museum, is shown in the photograph admiring some of the 17th and 18th century vessels from the Old Apothecary Shop now being installed. See page 203 for further information on this pharmacist's unusual and interesting career.



SEE YOU IN
PITTSBURGH

William Penn the 25th will mark the start of the first postwar convention of A. PH. A. and related organizations.

It will be the first meeting in two years. Convention time last year found everyone busy with the war. Transportation was impossible. Only one other time since 1852 had A. PH. A. missed its annual foregathering—the dark first year of the War Between the States. We have just emerged from another anxious period in the nation's history. And the profession faces new uncertainties and problems that require attention.

Fortunately the ASSOCIATION is better prepared than at any prior time to meet the challenge head on. During the past decade our full-time staff, working on behalf of professional pharmacy, has increased fourfold. Membership stands at an all-time high and is rising fast.

More important is the current program. Those who have followed the pages of *THIS JOURNAL*, or other independent pharmaceutical publications, hardly can be unaware of A. PH. A.'s active participation in whatever public health problems or projects touch our own profession; of courageous, competent leadership on behalf of pharmacists interested in pharmacy as a profession; of effective action wherever the professional interests of pharmacy or the health interests of the public are at stake.

That is why this year's convention—a time of decision—will be of especial significance. Significant to the individual pharmacist not only because he will want to sit in on the reports and discussion of what has happened and is happening in pharmacy, but also to have a voice in the ASSOCIATION's democratic processes for determining policy

and plans for the future. The meeting will be especially fruitful for veterans who have been largely out of contact with civilian pharmacy for several years. They have already shown a gratifying interest in and support of A. PH. A. objectives, and will find a special welcome at Pittsburgh.

Why Pittsburgh? True enough that several other cities had extended invitations and were originally considered for the convention site. But a special committee of the Council found that the most adequate hotel and meeting facilities during the particular week of August 25-30 were those of Pittsburgh. Even here space will be at a premium and convention goers must make reservations *promptly*.

As customary, the American Association of Colleges of Pharmacy and National Association of Boards of Pharmacy will convene in conjunction with A. PH. A. It is expected that other related organizations will do likewise—such as the American College of Apothecaries, American Society of Hospital Pharmacists, Conference of Pharmaceutical Association Secretaries and Plant Science Seminar. However, the Council wisely told the Committee on Standard Program: Arrange the schedule so there will be no interference with the sessions of the ASSOCIATION.

The A. PH. A. convention can do with fewer of the distractions of a three-ring circus. Pharmacists should be able to give full attention to these important first postwar sessions of the parent organization; and then likewise attend the meetings covering their more specialized interests.

The convention will probably be one of the largest and one of the most important in ASSOCIATION history. You can both help and be helped by taking your seat in the meeting rooms of the Hotel William Penn in Pittsburgh. See you in August.

MARK YOUR CALENDAR
AUGUST 25-30

A PHARMACIST IN THE W.A.C.

Sirs:

During our recent correspondence you suggested that my experiences as a pharmacist in the W.A.C. might be of interest to readers of the JOURNAL. My service was rather long—three years—but the story is brief.

I spent thirty months at Fort Devens, Massachusetts, as pharmacist at the Post Medical Center. When two of us arrived, there were seven male soldiers, three of whom were registered pharmacists, the others to be trained as helpers. It wasn't long before the men were shipped out and we two W.A.C.'s had it all to ourselves.

At that time it was a Station Hospital, but later became the Post Dispensary when Lovell General Hospital was enlarged. Then we not only had the Dispensary with all of the Out-Patient Clinics to take care of, but also had to do the manufacturing for all the dispensaries on the Post. The two of us did all that without any additional help.

But, like a majority of the registered pharmacists in the Army, we did not get any recognition. . . . I arrived at Fort Devens with a T/5 grade and was discharged with the same rating.

Those in charge do not seem to realize how important a pharmacist is or how many lives depend on medicines being properly prepared. I think we pharmacists should join together and demand a commission upon entering the Service. Nurses received commissions and a pharmacist is just as important. . . .

Despite this lack of recognition, I do feel that I did my share and can return to civilian life and continue to try to be of help to fellow citizens. I am now employed at the City Drug Co. where I am the only registered pharmacist in town. I am sure that I am doing a greatly needed job.

Abbeville, Ga.

VIRGINIA B. SEIGLER

COMMENTS FROM NAVY PHARMACISTS

Sirs:

Having read various articles published in recent numbers of the JOURNAL, I would like to comment on several issues which have arisen.

There has been much said about increasing the recognition of the pharmacist. How can this be accomplished without giving the pharmacist something more than a B.S. degree? B.S. degrees are given in every college to students who have completed science courses—the pharmacist has nothing more than a degree which may be gained by any college graduate. . . .

There have been several articles in different states

saying that a veteran who has had a certain length of service and was previously enrolled in a pharmacy college should take the state board examination without further schooling. This is not only unfair to those who have completed their college education, but tends to lower the standard of pharmacy which to the present time has made some progress. The government is helping the veteran financially. Any veteran, then, who wants to enter the profession should be willing to go to school for his own interest as well as that of pharmacy and the public.

There has been a continual complaint about the shortage of pharmacists. If there were fewer "drug-gists" and more genuine pharmacists, pharmacy could have more recognition. The public has to drive to their physician;

why not drive to have their prescriptions filled? . . .

In reference to the Pharmacy Corps in the Army: When I entered service most people with whom I talked had never even heard of the Pharmacy Corps. If the act was passed by Congress it should have been put into effect. In the Navy Hospital Corps, there has been much publicity about the outstanding work of the pharmacist's mates. This is not a direct credit to pharmacy. Most of the work was not accomplished by men who were registered pharmacists.

There are hardly enough registered men to man the pharmacies. Several pharmacists I know have been declared essential and held in service. If they are essential and in view of the service they are able to render in military hospitals, it is hard to understand why they have not been given more recognition. . . .

WILLIAM F. FITZPATRICK, PhM 2/c

ROBERT E. VANDERPOEL, PhM 2/c

VINCENT J. LINDENSCHMIDT, PhM 3/c

THE JOURNAL ON LUZON

Sirs:

After having received the JOURNAL for the past year while being in the Army, and enjoying its contents from cover to cover, I desire a renewal for the coming year.

The pages of the JOURNAL given to NNR products are fine. Keeps one abreast of the latest accepted by A. M. A. . . .

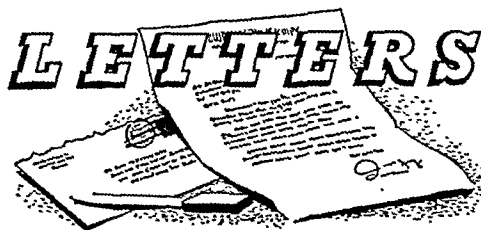
I am in charge of the pharmacy here at our hospital and come in contact with many medical officers. Incidentally, my *Pharmaceutical Recipe Book* is my password for assisting in formulae making.

Let's keep up the drive for higher standards and more professional and ethical trends.

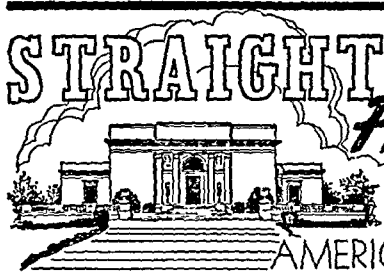
Batangas, Luzon

SGT. DESMOND R. BROWN

Philippine Islands



STRAIGHT



FROM HEADQUARTERS

by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

WARNINGS ON PRESCRIPTIONS

IT IS not the policy of the AMERICAN PHARMACEUTICAL ASSOCIATION to alarm the profession unnecessarily upon any matter. However, there are times when matters affecting the future of the profession must be called attention to with some force.

When the Federal Food, Drug and Cosmetic Act was passed in 1938 it became apparent that a new type of protection for the public would become available. This protection is concentrated in labeling of drugs and medicines. In line with established custom and the accepted professional relationship between physicians, pharmacists and patients, the Food, Drug and Cosmetic Act exempts prescription labeling from the general labeling provisions, with the following exceptions:

Section 503 provides that a drug dispensed on a written prescription—signed by a physician, dentist or veterinarian—shall be exempt from the requirement that the label on products offered for self-medication reveal the ingredients and the names of certain dangerous drugs.

This prescription exemption is permitted on the basis that the prescriber is licensed to administer such drugs and that the name and place of business of the dispenser, the serial number and date of the prescription, and the name of the prescriber shall appear on the label. It is further provided that the inclusion on the label of certain warnings shall not apply if the prescription cannot lawfully be renewed or the prescriber specifically directs that it shall not be renewed.

The Food and Drug Administration has, from time to time, issued interpretations of the various provisions of the Act in the form of informal opinions known as "FD&C Act Trade Correspondence." For purposes of identification this correspondence is usually referred to as "TC," with a serial number. Most of the interpretations to date have been on the labeling of products for sale directly to consumers, presumably for self-medication. However, on Feb-

ruary 14, 1946, there was issued TC 6-A headed, "Drugs dispensed upon prescriptions not exempt from warnings requirement." This statement was evidently intended to refer principally to the highly toxic new drug Thiouracil.

TC 6-A reads as follows:

"With reference to the warning statement which you state you find upon packages of Thiouracil

'Warning—This drug may impair resistance to infection. The physician should be consulted at the first sign of sore throat, fever, or any illness during treatment with Thiouracil.'

it is our opinion obliteration, destruction, or removal of this warning from the labeling when the article is received in interstate commerce and dispensed pursuant to a prescription would constitute a violation of the Federal Food, Drug and Cosmetic Act.

"Section 503 of the law provides exemption from certain of its requirements, including the listing of the name of the drug or the names of its active ingredients and the quantity of contents of the package. No provision is made for any exemption from the requirement of the law with reference to the appearance in the labeling of such adequate warnings against use in those pathological conditions or by children where its use may be dangerous to health, or against unsafe dosage or methods or duration of administration in such manner and form as are necessary for the protection of users.

"The article as you receive it from the manufacturer bears such warnings. The law specifically prohibits the alteration, mutilation, destruction, obliteration or removal of the whole or any part of the labeling of a drug if such act is done while the article is held for sale after shipment in interstate commerce and results in the article being misbranded.

"If you transfer part or all of the contents of the manufacturer's package to another container we think you should label the new container with the warning which appears upon the manufacturer's package."

Immediately upon the promulgation of this statement a number of bulletins were issued by pharmaceutical association secretaries and publications urging pharmacists to label prescriptions

for thiouracil with the above warning notice and also directing or implying that all drugs now requiring warning notices on their labels, in accordance with the interpretation of the Food, Drug and Cosmetic Act, would have to have such warnings transferred to the labels of prescriptions if such drugs are prescribed.

Breaks Rx Tradition

Obviously, such a blanket procedure on the part of pharmacists would call forth considerable resentment on the part of the medical profession, which is accustomed to having prescription labels read as the physician directs. Furthermore, the pharmacists' prescriptions, bearing on their labels a notice such as "Warning—May be habit forming" or any of the other many warning notices which have been devised for all kinds of drugs from laxatives to heart stimulants, would greatly alarm patients and might conceivably have an adverse effect upon their health.

We do not believe that the Food and Drug Administration intended any such thing to occur and it is our feeling that until further and specific notice is given with respect to each individual drug concerned, pharmacists should not deviate from the established procedure of labeling a prescription just exactly as the doctor orders it to be labeled.

Of course, any warning which the physician has written on the prescription as a part of the directions to the patient must appear upon the label of the prescription. This is accepted usage and we believe that it has been ingrained in pharmacists that they must meticulously follow the directions of the prescriber.

We are not recommending that the "informal opinion" of the Food and Drug Administration, set forth in TC 6-A, be ignored. It should receive the most careful and earnest consideration of both physicians and pharmacists. However, in our judgment, it is the physicians' prerogative to determine whether the warning shall or shall not appear upon the label.

We urge every pharmacist receiving a prescription for thiouracil, in the directions for which the physician has not incorporated the warning suggested by the Food and Drug Administration, to contact the physician immediately and inform him that the Food and Drug Administration believes this warning to be necessary on the label. But the physician should make the decision as to what shall appear on the label. We further urge pharmacists to make a note of the date and time of contact with the doctor and a record of his instructions in writing.

A. Ph. A. Confers With FDA

As for the incorporation of warnings upon the labels of prescriptions for drugs other than thiouracil, we suggest that no action be taken at this time. This matter is the subject of conferences between the Food and Drug Administration and this office, and further clarifying statements will doubtless be issued in due course.

We want it clearly understood that we are not, in any way, opposing the Food and Drug Administration in its regulatory activities, but we believe that this matter is so fundamental to the future of the practice of pharmacy and the professional relations between physicians, pharmacists and patients that it must be clarified.



A. PH. A. PRESIDENT WILL ADDRESS WESTERN SESSIONS

Dr. George A. Moulton, president of the AMERICAN PHARMACEUTICAL ASSOCIATION and retail pharmacist of Peterborough, N. H., will speak at eight Western state pharmaceutical association meetings during May and June.

Dr. Moulton is executive secretary of his own state association and is a member of the State Commission of Pharmacy. In the course of years he has held many other offices in the profession.

As the representative of the A. Ph. A. he has been invited to address the following state as-

sociation conventions during his western tour:

- Minnesota—St. Paul, May 6-8
- Utah—Salt Lake City, June 1-2
- Wyoming—Casper, June 4-5
- Colorado—Estes Park, June 8-9
- Montana—Missoula, June 12-13
- California—San Francisco, June 16-18
- Oregon—Portland, June 23-24

Dr. Moulton may be able to extend his trip to attend the Washington State Pharmaceutical Association meeting, now scheduled to be held early in July at Spokane.

"Teacher of Pharmacy"

THE UNSAVORY STORY OF AN ATTEMPT TO PROFIT FROM LOW PROFESSIONAL STANDARDS AND MAIL-ORDER "EDUCATION" IN THE FIELD OF PHARMACY

CERTAIN newspapers and the mails are carrying the message of a "comprehensive correspondence course" to unwary drug clerks and trusting youth throughout the country. Communications—and cash—are addressed to an anonymous "Teacher of Pharmacy" in Springfield, Massachusetts.

Because the "Teacher's" activities here disclosed have been a blot on the profession for too long, THIS JOURNAL is recording facts and information gathered from various sources* so that prospective "students" may be fully informed and guarded against the pitfalls of lost time and money which can result from a too literal acceptance of the "Teacher's" promises.



IRVING ISADORE JACOBS

Pharmacists have been asking: Who is this nebulous and elusive "Teacher":

His name is Irving Isadore Jacobs. As a young man he attended the New Jersey College of Pharmacy, where he obtained his Ph.G., and in 1915 registered in New Jersey. His subsequent career has been devoted mainly to promoting cram courses and mail-order education.

Newspaper advertisements and direct mail promotion for his current enterprise follow a recognizable pattern typified by his announcement reproduced on page 198.

Young men and women are urged to take correspondence courses in pharmacy under the guise of possible registration in Massachusetts where there is no prerequisite law. Jacobs' circulars also indicate that his "graduates" may obtain Federal Civil Service positions as pharmacists. This is of course untrue, and the U. S. Civil Service Commission recently advised "Teacher of Pharmacy" that he is spreading incorrect information.

Let us write to Jacobs for further details on this alluring short-cut to pharmacy. Here is his reply, sent to a young woman in Iowa.

Dear Miss ———:

Thank you for your letter of November 29. You will find literature enclosed explaining fully the correspondence (home-study) course in pharmacy in preparation for the State Board of Pharmacy Examinations for the Registered Pharmacist license in Massachusetts and not Iowa for Iowa demands college of pharmacy graduation for admission to the Registered Pharmacist examinations.

Unlicensed drug clerks and unlicensed proprietors of drug stores should make every effort to obtain a license in at least one state before all demand college of pharmacy graduation†. This is your last opportunity to become registered

(Continued p. 198)

* The JOURNAL is especially indebted to the National Association of Boards of Pharmacy for use of its extensive file of source material.

† The only states not requiring college graduation today are Massachusetts, Nevada and Vermont.—THE EDITOR.

CONNECTICUT PHARMACEUTICAL A

OFFICE OF THE PRESIDENT
FAIRFIELD PHARMACY, FAIRFIELD, CONN.

April 4, 1946

President
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Fairfield

First Vice President
Wm. TRACY CADWELL,
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Second Vice President
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Hartford

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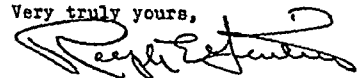
Mr. W. H. ~~XXXXXX~~
222 S. Court House Road
Arlington, Virginia

Dear Mr. ~~XXXXXX~~

Please be informed that I have never authorized
"Teacher of Pharmacy in Mass." to use my name as an
endorsement of his present program.

May I strongly recommend that in view of the trend
towards higher educational pre-requisites now taking place
in pharmaceutical circles, that you plan on entering a
recognized college of pharmacy in order to obtain a
registered pharmacist license. In this manner you will
be assured of the proper training and background necessary
for a successful career in this profession.

Very truly yours,


Ralph Gentile

STATE OF CONNECTICUT Board of Pharmacy Commissioners

CHARLES GUSTAFSON, SECRETARY
ROOM 418, STATE CAPITOL
HARTFORD, CONNECTICUT

April 4, 1946

Commissioners

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FRANCIS M. LANDY
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FRANK C. GROSS
STANFORD

Mr. W. H. ~~XXXXXX~~
South Courthouse Road
Arlington, Virginia

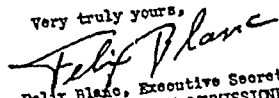
Good Morning, Mr. ~~XXXXXX~~

With reference to your letter of
March 29th, I wish to state very emphatically first, that
I have never permitted my name to be used in favorable
connection with the advertising sent out by the
Massachusetts "Teacher of Pharmacy"; second, that I have
never even heard from the "Teacher"; and third, that his
name has not been used on any of the advertising.

Who is he? The members of our
State Pharmacy Commission have gone on record both at
meetings of pharmaceutical groups in our State and in the
press (our official journal, the Connecticut Pharmacist,
carried a column advising men and women who might be
interested in taking the course to ask themselves where
they might practice pharmacy after they completed it)
as opposed to such misleading advertising.

It is unthinkable that anyone,
particularly a State Pharmacy Commissioner or any member
of the State Pharmacy Commission, should lend his name
to this project; I hope I have expressed myself with
sufficient clarity so that anyone who reads this letter
will be assured that I have never endorsed the "Teacher
of Pharmacy" nor the advertising.

Very truly yours,


Felix Blanc, Executive Secretary
BOARD OF PHARMACY COMMISSIONERS

REFERENCES of
the Teacher, both
widely publicized,
give their recom-
mendations to a
prospective pupil.

without a high school certificate and without a college degree, for the college law goes into effect here in 1948.

Even though a license in Massachusetts has no legal status in your state and even though you may not care to leave your state, yet you should make every sacrifice to obtain a license in Massachusetts as compensation for the many years you have given to pharmacy and further because a Massachusetts license hanging on your wall will certainly add prestige to you in the eyes of your customers and add more respect to you from the physicians in your neighborhood.

Then again, who knows what value a license in any state may have all over the country by new legislation in the future, especially after January, 1948, when Massachusetts will also require college of pharmacy graduation?

Furthermore, you may get a notion in your

YOUTHS tempted to take the "Teacher's" correspondence course are apt to find themselves in a vocational blind alley. A typical advertisement currently appearing in metropolitan newspapers is shown below.

head to practice pharmacy or own a drug store in Massachusetts; or even act as a saleswoman or representative or detail-woman in your state for one of the pharmaceutical houses, or be employed in the drug room of a hospital or institution, and these positions mostly demand a license in any state.

The knowledge, training, and education gained from this thorough, comprehensive, and excellent course in pharmacy is alone worth many times the tuition fee even if you do not take the State Board examinations here. Thousands of drug clerks have benefited from this course for the past thirty years and there is no doubt that you also will benefit from it.

We are compelled to inform you that the tuition fee for the correspondence course is to be increased to \$250 on January 1, 1946; also that the tuition fee for the private tutoring course is to be increased to \$500 on January 1, 1946. Please take note of the many advantages attached to enrolling at this time, and send in your enrollment blank by return mail even if you do not want to actually start your studies until after the first of the year. You will receive every possible help and courtesy throughout your studies. Do not delay this any longer for later on in life you may regret that you did not

DRUG CLERKS *Becoming*
Registered Pharmacists
Without College Training

Open opportunities as drug store owners or managers, pharmacy house sales, detail agents or in Civil Service. Until 1948 drug clerks can take the Massachusetts State Board of Registered Pharmacists license — if they've had four years experience in drug stores, are 21 years old and a citizen. Massachusetts residence not required. Our Correspondence Course in Pharmacy or Private Tutoring Course at Springfield \$250. Private Tutoring Course \$500. **ENROLL NOW** — thousands of future graduates — many are top in pharmacy world. **WRITE: TEACHER OF PHARMACY (Est. 1915)**
1137 Main Street - Springfield 3, Massachusetts

take advantage of this last opportunity to become a full-fledged Registered Pharmacist.

Cordially yours,

TEACHER OF PHARMACY

(S) Irving Jacobs, Ph.G., Director

How long does it take the student to complete "this thorough, comprehensive and excellent course" of 25 lessons? About six weeks or so, says Jacobs, although students can take as long as they like. In this way they "obtain a thorough knowledge of . . . theoretical and practical pharmacy, inorganic and organic chemistry, materia medica, botany, toxicology, posology, pharmaceutical and chemical arithmetic, pharmaceutical Latin, prescription incompatibilities, previous State Board questions and answers, etc."

Why do university professors take four years and more to teach these sciences when this "Teacher of Pharmacy" can do the job in a few weeks by mail? His academic background must be superb—but let's look at the record.

Jacobs claims, or admits, that his instruction is backed by thirty years of experience. Indeed, the ink was scarcely dry on his diploma before he is said to have opened the "Hudson Institute of Pharmacy" in a dingy hall room in Jersey City. He was also listed as an instructor at the "Columbia College of Jersey City" which had catalogs printed but never functioned, its charter having been revoked by the New Jersey State Board of Education. Not to be deterred, Jacobs then started a venture of his own in Brooklyn, according to an early exposé of this phase of his career.*

Ph.G. Thrown in for \$10

By 1920 Jacobs was dean of the so-called pharmacy school of the notorious "Lincoln-Jefferson University," which gave "correspondence courses leading to the B.A., B.Sc., Ph.B., M.A., B.L.C., LL.B., B.D., S.T.D., Ph.D., etc." His diploma mill not only granted the Doctor of Pharmacy after "ten large lessons by mail" but if the student was not a college graduate the Ph.G. degree was thrown in for \$10 extra.

Apparently the Lincoln-Jefferson "School of Pharmacy," which had "offices" in Chicago, was operated by Jacobs from the East. For later, in 1925, when Lincoln-Jefferson and other diploma peddlers were broken up by a sweeping investigation, Jacobs was also revealed as the

head of the "Connecticut School of Pharmacy" in Hartford, which operated in a similar fashion and was "affiliated with a western University."

In trying to forestall the effect of tighter laws and professional advancement upon his activities, Jacobs had made a desperate effort to nullify the Connecticut college prerequisite by extension of the exemption date. Fortunately for this state, the attempt failed despite Jacobs' acquisition of the title of Chairman of the Execution Committee in a hurriedly organized Connecticut Drug Clerks' Association.

Greener Pastures

Finally, Jacobs decided that a change of climate would be desirable, and moved to Tennessee where he promoted his activities with the same fine phrases he still finds effective today.

In 1936 he had no difficulty in obtaining registration in Missouri "on diploma," and subsequently an intensive advertising campaign was started by the "Missouri-Tennessee Pharmacy School," which had the familiar earmarks of a Jacobs venture. The school had no equipment or classrooms of its own. Sessions were held one night each week at the Y. M. C. A. in several Tennessee and Missouri cities.

Next, Jacobs launched a pretentiously respectable project, incorporated as the "Missouri College of Pharmacy" and offering "courses to conform with requirements of the Missouri State Board of Pharmacy."

Although the National Association of Boards of Pharmacy cautioned against recommendation of the school, the then Missouri Board secretary advised the "College" that the curriculum of studies met with the Board's approval and that graduates would be admitted to examinations for licensure.

When the school solicited students from all states on what were considered false promises, the National Association of Boards of Pharmacy again voiced its opposition. In a confidential memorandum to state boards which might be asked to recognize the "Missouri College," the N. A. B. P. called attention to the past record of Jacobs, the cram-school type of advertising employed, and the fact that the institution was apparently conducted for profit. The catalog, which listed neither administrative officers nor faculty members, carefully stated that the "college reserves the right to make such changes in the curriculum, schedule, calendar, regulations, faculty, etc., as circumstances may require."

The wisdom of the N. A. B. P.'s stand soon be-

* *Pharmaceutical Era*, January 19, 1924.

came apparent when the long-heralded opening of the college failed to materialize in the fall of 1936 and creditors filed a petition for receivership.

Taking this incident in his stride, Jacobs' energies veered to his "Missouri-Tennessee Pharmacy School," which was then holding cram classes in a St. Louis hotel.

His References

It is interesting to note that many of the references listed for this operation back in the 30's appear on Jacobs' list of references now being used to promote his activities centered in Massachusetts. Of course new names have been added, and "Teacher of Pharmacy" makes much of the fact that the 1946 president of the Connecticut Pharmaceutical Association and the present executive secretary and former inspector for the Connecticut Board of Pharmacy are listed among his references. As might be expected, the names of these men are being used without their consent and against their wishes (see page 197). Moreover, they consider Jacobs' 25-easy-lessons-by-mail wholly inadequate for the modern practice of pharmacy.

We have not determined with certainty just when Jacobs left Missouri, but his days were numbered when the Missouri Board scandal broke in the spring of 1937. A group of students who had paid the cost of a four-year college education were incensed over the fact that certain cram-school students allegedly were permitted to cheat their way through the Board examinations. With right thinking Missouri pharmacists fully aroused, notably the Alumni Association of the St. Louis College of Pharmacy, the Governor ordered a full scale investigation by the Attorney General.

Out of the testimony emerged one fact of particular interest here: The Missouri Board had made certain changes in its regulations which made it possible for Jacobs' "graduates" to gain admittance to examinations. Moreover, affidavits and testimony of the students and of A. F. Schlichting, now dean of the St. Louis College of Pharmacy, indicated that there had been wholesale cheating. In the end, the Governor ousted the entire Pharmacy Board except the president, and a new college prerequisite law was passed enabling the new Board to require applicants to be four year graduates.

In all likelihood such an atmosphere was not healthful for Irving Isadore Jacobs, for within a few months the "Kenmore School of Phar-

macy" in Boston was offering a "thorough and complete one-year course."

For some reason Jacobs soon relinquished active charge of this enterprise to open the "Boston Institute of Laboratory and X-Ray Technique" a few doors down the street. The promised instruction from eminent New England physicians and surgeons failed to materialize, however, and in 1939 complaints from discontented students soon had Jacobs embroiled in another state investigation with the backing of the Boston Better Business Bureau and the American Association of Clinical Pathologists. Federal authorities later joined the Attorney General's office to see if his cleverly worded promotion was in violation of the postal laws. Officials ordered the school to accept no more money from applicants until a real reorganization had taken place with acceptable equipment and instructors.

Whether Jacobs ever tried to operate the enterprise legitimately is not clear from the available record, but a few months later, in September, 1940, he had a correspondence school in pharmacy operating in Springfield, Mass., his present location.

He Tries Retail Pharmacy

As a diversion in 1943, Jacobs purchased the pharmacy of Thomas Salzano in Maplewood, N. J. He immediately began extensive advertising and underselling. Within four months the pharmacy's stock had been depleted by something over \$1000. The money Jacobs received he pocketed. Finally it was necessary for Pharmacist Salzano to foreclose the chattel mortgage he held and take over the pharmacy with the reduced inventory and considerable indebtedness contracted by Jacobs.

In a letter to the New Jersey Board regarding this case, a member of the law firm of Lum, Fairlie and Wachenfeld went "on record as stating that I will hold myself in readiness to personally bring professional charges in the event you apprehend Mr. Jacobs."

Meanwhile, "Teacher of Pharmacy" continued to promote his cram course anonymously from the Springfield address. The steady advance of the profession slowly constricted Jacobs' field of operation, however. Since the college prerequisite law of Massachusetts becomes effective in 1948, he has currently launched a feverish promotion from his sanctuary there.

Needless to say, only disappointment awaits those who participate in this travesty on professional pharmacy. The few mail-order

HE OFFERED TO SERVE

As war clouds gathered in 1940, Jacobs apparently felt impelled to offer his services for the defense of the nation. *THIS JOURNAL* has received a copy of a letter which was reportedly written by Jacobs to President Roosevelt. After modestly describing himself as a "well qualified expert" and stating in seven "whereas's" why wartime America needed his type of pharmaceutically trained personnel, this proposal was offered:

"THEREFORE it is my suggestion and recommendation that the United States immediately authorize the institution of classes of instruction in theoretical and practical pharmacy in various states throughout the United States. . . . Thousands of young men and women will thrill at the opportunity of undertaking this interesting work and serving the country in peacetime at the training camps and in wartime at the military dispensaries at base hospitals. I shall be honored to report to Washington at your command, to discuss this plan with you or your authorized agent to the end that the plan could be placed in operation at once. If authorized to do so," said Jacobs, "I would have the classes started in September [1940] and by the end of October, 1941, I would have available for government service 2500 young men and women. . . ."

pharmacists who may succeed in obtaining a license in Massachusetts—or in Vermont or Nevada which still hold out against the pharmaceutical needs of modern medical care—will find themselves barred from practice by all state governments elsewhere in the country. Such pharmacists cannot secure a license either by reciprocity or by examination in any other states.

Even where standards are so low that Jacobs' "graduates" are eligible for examination the odds are heavily against them. Only 40 out of 226 non-graduate applicants examined in 1943 were licensed. Only 26 out of 158 got by the examining board in 1944.

Obviously, Jacobs has pulled a shoddy academic robe over the moldy skeleton of a teaching technique that was unanimously condemned decades ago as totally inadequate for professional training. Prospective students are being misled both as to the adequacy of the instruction and the future opportunities which will be theirs.

No governmental, professional or educational group has approved Jacobs' activities. Jacobs, "Teacher of Pharmacy," has never been associated with any institution approved by an accrediting agency. Jacobs' "schools" and "colleges" have not had buildings, libraries, laboratories or other equipment essential for a bona fide, reputable educational institution in the pharmaceutical field.

To obtain a pharmacist's license today, the governments of 45 states and the District of Columbia require that the applicant (1) be a high school graduate, (2) hold a college degree based on four years of professional study in a recognized institution, (3) have at least one year, in most instances, of practical experience or internship under a licensed pharmacist and, (4) pass a comprehensive state examination.

Moreover, because of the rapid advances in pharmaceutical and medical science, the American Association of Colleges of Pharmacy has considered favorably the adoption of a fifth year of college work to prepare pharmacists fully for their modern public health responsibilities.

To safeguard the public health, to protect gullible youth, to maintain high standards of pharmacy's essential services, there can be no doubt that activities such as have been recorded here must be curbed. Pharmacists and others in public positions are asked to join with the American Pharmaceutical Association in this objective.

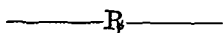
Qualified pharmacists and the State Board in Massachusetts can be expected to explore every avenue of legal restraint. Pharmacists elsewhere should place this information in the hands of newspaper editors who have accepted "Teacher of Pharmacy" advertising and also prepare letters for the editorial page warning against the lure of this propaganda and outlining the requirements for the practice of pharmacy in their state. Local Better Business Bureaus and other civic organizations should be given full information.

The factor which has given this type of promotion any possibility of financial success is the continued refusal of the legislatures of Vermont and Nevada, and the long postponement in Massachusetts, to place pharmaceutical licensure on a respectable and safe basis as far as the public health is concerned. Pharmaceutical associations in these states have done their part but public sentiment has lagged behind.

The U. S. Civil Service Commission fortunately has ceased to be an unwitting accomplice to this type of activity. How long will it take for the representatives of the people in these

pharmaceutically backward states to see the light? "Teacher of Pharmacy" can ensnare the ignorant and the gullible only as long as he has access to the newspapers, the mails and the radio for his announcements and while such good names as Massachusetts, Vermont and Nevada can appear in his announcements as havens of refuge for pharmacists with substandard qualifications.

If you desire a reprint of this article write to the JOURNAL, 2215 Constitution Avenue, N. W., Washington 7.



MOLD MUTANT PROVIDES HIGH YIELD OF PENICILLIN X

Isolation of a new strain of penicillium that gives relatively high yields of penicillin with at least half of it in the potent X form was announced at the meeting of the American Association for the Advancement of Science in St. Louis. This is in contrast to yields of from one-seventh to one-fifth of penicillin X in the product of many of the strains previously tested.

Ultraviolet irradiation of penicillium cultures was the technique used by Kenneth B. Raper and Dorothy F. Alexander of the Department of Agriculture to produce the mutant. The evidence is not conclusive that the new strain resulted from the irradiation but this is probable.

A higher yield of penicillin X has important implications because this form is two or more times as potent on many organisms as commercial penicillin (mainly penicillin G) and is also effective against several pathogenic organisms that do not yield to commercial penicillin.

Another advantage of penicillin X is that it does not seem to be eliminated as rapidly as the other penicillins, and therefore tends to check infections more rapidly.

Penicillin X may be separated by a simple process from the mixed product recovered after fermentation. Penicillins F, G and K are soluble in chloroform, while penicillin X is not. This makes practical the isolation of the more effective form on a commercial scale. Cultures of the new mold strain, providing a high yield of penicillin X, are available to manufacturers.

The mutant thrives in standard nutrient media now used, and in other ways appears similar to its parent strain.

D. C. RESIDENTS FAVOR COMPULSORY HEALTH INSURANCE

Seventy per cent of the residents of the nation's capital favor President Truman's health insurance plan, which is incorporated into the Wagner-Murray bill, according to a poll taken by the *Washington Post*. Twenty-one per cent of D. C. residents object to the health plan, chiefly on the grounds that there are already too many deductions from their pay checks. Nine per cent of those questioned were undecided.

Almost 9 out of 10 Washingtonians earning less than \$4000 yearly favor the plan, but higher income groups support the plan by a slightly smaller majority. Of those who now have some type of private insurance protection, 79% nevertheless favored compulsory health insurance.

LIQUID DENTIFRICE FORMULA

A liquid dentifrice developed at the Rochester (N. Y.) State Hospital by Ralph W. Englehardt, chief pharmacist, has the following formula (*Bull. Am. Coll. Apoth.*, 7:6, 1946):

Sodium alginate*.....	4	Gm.
Aqua dest.....	200	cc.

Allow this combination to stand overnight, and add—

Saccharin soluble.....	0.25	Gm.
Aqua dest.....	20	cc.

To the combination, now add—

Flavor**.....	8	cc.
Alcohol.....	100	cc.
Glycerin.....	40	cc.

The combination then is mixed and added to—

Sodium lauryl sulfate†.....	20	Gm.
Aqua dest.....	150	cc.

Finally add—

Amaranth solution (5%).....	1	cc.
Aqua dest., q.s. ad.....	500	cc.

The product is completely homogenized and distributed in convenient dispensing bottles.

* Sodium alginate is available from R. F. Revson Co., 144 W. 18th St., New York 11, N. Y.

** Any flavor may be employed. The following combination is used by Mr. Englehardt:

Oil of Anise.....	8	cc.
Oil of Cassia na.....	16	cc.
Oil of Caraway.....	68	cc.
Oil of Peppermint.....	100	cc.
Methyl Salicylate q.s. ad.....		

† 'DUPONOL C' from E.I. du Pont de Nemours & Co., Wilmington 98, Del., was used.

DR. CHARLES WHITEBREAD

PHARMACIST AND MUSEUM CURATOR

DR. CHARLES WHITEBREAD, shown on the cover of this issue, holds one of the most unusual positions occupied by a pharmacist. From his office in the U. S. National Museum he has directed the development of the Division of Medicine and Public Health for more than a quarter of a century.

Those visiting the nation's capital see here a remarkable series of exhibits on the health professions, among which pharmacy finds its rightful place. With more than 2,000,000 persons visiting the Museum annually, Dr. Whitebread's work assumes an important role in the profession's public relations, creating a better understanding of pharmacy's part in medical care, both modern and historical. The white-haired, genial curator retains a keen interest in pharmaceutical affairs, although pursuing a career that has taken him afield from early activities in retail pharmacy. He has contributed a number of pharmaceutical papers to THIS JOURNAL and other publications, and has prepared several government tracts usually on historical subjects.

Born in Oscoda, Michigan, in 1878, Dr. Whitebread came to Washington while still a young man to enter the School of Pharmacy at George Washington University. Here as an honor student he studied the profession which formed the background for his life's work at the Museum. After obtaining the Doctor of Pharmacy in 1911, he practiced for several years in various retail pharmacies in the District of Columbia.

Although Dr. Whitebread had entered government service in the last days of "Teddy" Roosevelt's administration, it was in 1918 that he became Associate Curator at the U. S. National Museum, in charge of the Division of Medicine and Public Health.

The present panorama of exhibits in pharmacy and allied fields stems from a modest beginning in 1876, when a collection of drugs was displayed at the famous Centennial Exposition in Philadelphia, Pa.

Later transferred to the Department of Agriculture, thence to the National Museum, the collection lay dormant until a naval surgeon, Dr. J. M. Flint, was appointed to start work on a Section of Materia Medica. After the retirement of the first curator, Dr. Whitebread was selected to guide the development of the collection to its present stature in the Museum, which is part of the internationally renowned Smithsonian Institution.

Today's visitor will find extensive sections devoted to medicine, pharmacy, materia medica and public health. Besides portraying the sweep of pharmaceutical history through the ages, the section of pharmacy exhibits shows modern processes and products, pharmacy equipment, and prescription ingredients with many of the crude drugs from whence they come.

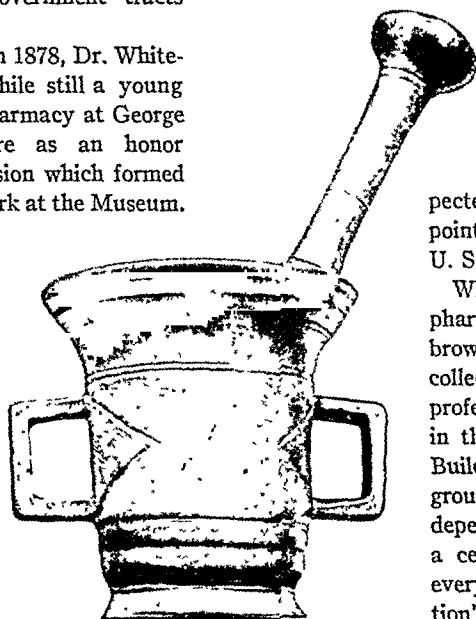
At present Dr. Whitebread devotes much of his time to the exacting task of directing reconstruction of the Old Apothecary Shop, which is being

deposited in the museum by the AMERICAN PHARMACEUTICAL ASSOCIATION.* This historic European pharmacy is expected to be one of the high

points of interest in the U. S. National Museum.

When in Washington pharmacists will want to browse through these rare collections depicting the profession. They are housed in the Arts and Industries Building of the Smithsonian group at 9th St. and Independence Ave., S. W., a center of attraction for everyone visiting the nation's capital. The pharmacist will find here a warm and personal welcome

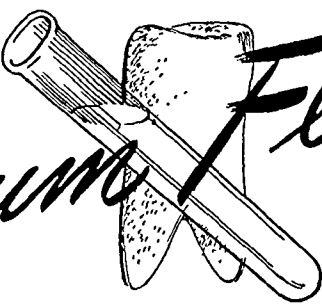
extended by his friendly and unusual colleague, Dr. Whitebread.



* For detailed information on this unique collection, which was given to the A. P. H. A. in 1945 by E. R. Squibb and Sons, see THIS JOURNAL, 6:184, 1945, and 7:157, 1946.

DENTAL CARIES AND

Sodium Fluoride



by PHILIP JAY*

A REPORT AUTHORIZED BY THE COUNCIL ON DENTAL THERAPEUTICS, AMERICAN DENTAL ASSOCIATION

THE inverse relation between fluoride-bearing domestic water and the prevalence of dental caries in children has been definitely established. The intensity of dental caries attack as measured by the extent of caries experience in the permanent teeth of children twelve to fourteen years old who are continuously exposed to fluoride water is strikingly lower than that in children who live in neighboring communities supplied by fluoride-free waters.

Observations to this effect have been made by Dean¹ and his associates in the United States, by Ockerse² in South Africa, by Ainsworth and Weaver³ in England and by others in different parts of the world. This is one of the few findings in dental caries research that have not become the subject of controversy.

Because of the toxic nature of fluorine, the possible application of this development in caries research has been approached cautiously by most investigators in this field. Others have been less conservative so that the prospect of the fantastic exploitation of fluorine in dental caries control is a menacing possibility. It is for this reason that an attempt will be made to bring this rapidly expanding subject up to date, although adequate reviews have been published from time to time in the past.^{4, 5}

The preponderance of evidence indicates that fluorine is the active caries-inhibitory factor in the water supplies. All of the communities studied which were supplied by water containing more than 0.5 p.p.m. (parts per million) of fluorine had low dental caries rates. No correla-

FLUORIDE IN DENTRIFICES OR MOUTHWASHES NOT JUSTIFIED BY PRESENT DATA, ALTHOUGH SMALL AMOUNTS IN DRINKING WATER DURING YOUTH LOWERS DENTAL CARIES....TOPICAL USE MAY BE HELPFUL IN CHILDREN

tion was observed between the prevalence of dental caries and the mineral content of the water as indicated by the total hardness.

As an illustration, Colorado Springs was found to have a caries rate of 246 (the number of permanent teeth with caries experience per hundred children twelve to fourteen years old). The fluorine content of the water was 2.6 p.p.m. The caries rate of Elmhurst, Ill., with a water supply containing 1.8 p.p.m. of fluorine was 252. The caries rates in both of these fluoride areas were low; yet the total hardness of the Colorado Springs water was 27 p.p.m., as compared with 323 p.p.m. of the Elmhurst water.

To illustrate this point further, the high caries rate of Middletown, Ohio (703), was associated with water which was practically fluorine free (0.2 p.p.m.), but which had a total hardness of 329, as compared with 27 p.p.m. for Colorado Springs.⁶

The low caries rate in Deaf Smith County, Texas, has been attributed, in part, to the high phosphorus content of the locally grown produce. In reality, the Texas foods are not remarkably different in phosphorus content from foods produced in most regions of the United States, regardless of the incidence of dental caries.⁷

Solar radiation, which has also been suggested as a complicating factor, may be eliminated from

The Council on Dental Therapeutics has authorized publication of this report as one of a series on pharmacology and therapeutics. The opinions expressed are those of the author and do not necessarily reflect the opinion of the Council. *Journal of the American Dental Association*, 33:489 (April), 1946; published in THIS JOURNAL by permission.

* School of Dentistry, University of Michigan, Ann Arbor.

consideration. The neighboring cities of Oak Park and Maywood, Ill., are exposed to the same amount of sunlight, but the caries rates differ greatly. Maywood, with a water supply containing 1.2 p.p.m. of fluorine, has a caries rate of 258, as compared with the high caries rate of 722 in Oak Park, which is supplied with fluorine-free Lake Michigan water.

The domestic water supplies of the low-caries communities vary in other respects, but they all contain fluorine, so that fluorine seems to be the active principle involved.

Experiments in Animals

Dental caries can be produced experimentally in susceptible rats by the inclusion of coarsely ground corn or rice in the ration.⁸ The caries-producing potency of this diet is greatly diminished by the inclusion of fluorine, either directly in the ration or in the drinking water used by the experimental animals.⁹ This finding is a further indication that fluorine is responsible for the caries-inhibiting property of certain domestic waters. The idea loses specificity somewhat by the fact that iodo-acetic acid, another enzyme inhibitor, is also effective in reducing the severity of rat caries.⁹ Inasmuch

as experimental rat caries is so dependent upon the physical quality of the diet, its similarity to caries in human beings is not complete. The inhibition of rat caries by fluorine is, therefore, not an absolute indication that fluorine would be equally effective in man.

On the other hand, hamster caries can be produced on either coarse or fine diets, thereby more closely resembling caries in man,¹⁰ and caries in this animal is also inhibited by the inclusion of fluorine in the experimental diet.¹¹ Unlike the rat, the hamster also develops smooth surface caries under experimental conditions. It would be interesting to know if fluorine inhibits this type of caries as well as the occlusal type*, since the reduction of dental caries on the smooth surfaces of the teeth is most striking in persons residing in fluoride areas. From the available data on the hamster, this important distinction cannot be made.

Caries in animals has been inhibited repeatedly when the fluorine was introduced by mouth. The fact that fluorine introduced subcutaneously in comparable doses does not inhibit rat caries may be a clue to the nature of this phenomenon.¹² When Arnold and McClure injected amounts of fluorine comparable to 50 p.p.m. in drinking water for rats, they found that the fluorine content of molar enamel had increased but that caries was not inhibited. This finding might be interpreted to indicate that the fluorine was adsorbed by the dentinal aspect of the enamel and hence exerted no antienzymatic or antibacterial effect on the oral surface of the teeth.

The increase in the fluorine content of rat molar enamel following the feeding of fluorine by mouth and the fact that this increase was accompanied by the reduction of caries activity suggests that enamel is capable of adsorbing this substance.^{13, 14} Studies by Armstrong, which indicate that caries-free teeth contain more fluorine than carious teeth, lend still more credence to the probability that fluorine is responsible for the low prevalence of caries in communities supplied by fluoride-bearing waters.¹⁵

Addition of Fluorine to Water

The evidence is very impressive, but still largely presumptive. It remains to be seen whether the addition of fluorine to a fluorine-free drinking water will be accompanied by a decline in the rate and intensity of caries attack in a population exposed to water so treated. Two such studies are now in progress.

* Occlusal caries is that occurring on the masticating surfaces—THE EDITOR.



The water supply of Newburg, N. Y., is being treated with sodium fluoride under the supervision of the New York State Department of Health, and the water supplied to Grand Rapids, Mich., is being similarly treated by the Michigan Department of Health in collaboration with the U. S. Public Health Service, and the University of Michigan. In each case, the water, as it is distributed, contains approximately 1 p.p.m. of fluorine, and the projects are being conducted under experimental conditions with suitable checks and controls.

The trends will very likely not be discernible before 1950 and possibly later. Until such time as the progress of these studies can be evaluated, the universal treatment of water with fluoride, except under rigidly controlled experimental conditions, is not indicated.

One part per million of fluorine was chosen inasmuch as mottled enamel is of no clinical importance at that level. Although the caries rates are inversely proportional to the amount of fluorine in the water, the declining caries rates level off at from 1 to 1.5 p.p.m., so that the maximum inhibition of caries occurs at approximately 1 p.p.m.⁶

There is no reason to believe that toxic effects will accrue from fluorine ingested at this level. McClure has calculated the fluorine intake for children exposed to drinking water containing 1 p.p.m. of fluoride to be from 1 to 1.5 mg. per day from food and water.¹⁶ The fluorine content of foods is the same in all parts of the United States so that in the treatment of water supply the natural geographic distribution of fluoride need not be considered. The lethal dose of sodium fluoride is considered to be about 4 Gm. A dose of 228 mg. has been known to produce toxic symptoms.¹⁷ In view of the fact that 88% of the fluorine ingested is excreted in the urine and 8% in the feces, the ingestion of 1 or 2 mg. of fluoride daily does not constitute a hazard.^{18, 19} The fluorine not excreted is stored in the skeletal system, but pathologic conditions have not been observed in thousands of persons in this country who have been exposed for many years to water containing 1 to 2 p.p.m. of fluoride.²⁰

The epidemiologic studies do not indicate that the caries-inhibiting factor in domestic water will benefit persons who move into fluoride areas after the teeth are formed. There is some evidence that adult males who had spent the first eight years of life in fluoride areas before moving out had less caries than those spending all of their lives in fluoride-free areas, as revealed by the

examination of selectees in induction centers in Illinois.²¹

Other Methods of Application

Other methods of fluorine application have been suggested for those who are not likely to benefit by the treatment of domestic water. They are chiefly the use of capsules containing bone meal, which is rich in fluoride, and the topical application of sodium fluoride in solution or paste form.

The evidence favoring the use of bone meal is, to date, not impressive. One study reports its successful use in nine adults.²² This was a preliminary investigation which lacked controls, and extravagant claims were not made by the author. The fact that fluorine ingested in bone meal is largely excreted in the feces is an indication that it is not readily metabolized in this form.²³ The publication of this study, however, provided the stimulus for the sales promotion of bone meal products for caries control. There is no evidence that the ingestion of fluorine after tooth calcification will arrest caries activity in man. Favorable results have been reported when fluoride was applied topically to the teeth. The use of bone meal in capsule form precludes the possibility of contact with the teeth, so that it is not likely that this form of fluorine therapy would be at all effective.

Neither does it seem likely that sodium fluoride, as used in a mouthwash, will reduce caries activity significantly. The one published report which suggests its use does not contain convincing evidence that 5 p.p.m. of sodium fluoride in a mouthwash is beneficial.²⁴ No data have been published on the effect of fluoride-containing dentifrices so that there is no indication for the use of fluorides in mouthwashes or dentifrices at this time.

The use of fluoride applied topically to the teeth has received considerable attention. Cheyne²⁵ treated 27 children four to six years old with 0.05% potassium fluoride in aqueous solution. The solution was applied to all of the teeth after a prophylaxis, and the treatment was repeated four times during the year of the study. A control group was given the prophylactic treatment without the fluoride solution. The treatment group averaged 3.09 new lesions as compared with 6.04 for the control group, a difference which amounted to a 50% reduction associated with the fluoride treatment.

Bibby²⁶ treated one quadrant of the mouth of each of 90 children ten to thirteen years of age with a 0.1% sodium fluoride solution for a

period of one year. Eighty of these children received the treatments for two years. All averaged 3 treatments per year for the entire period. Bibby observed about a 40% reduction in caries activity for the treated teeth. Somewhat less protection was noted for the second year than for the first.

Knutson and Armstrong²⁷ treated one-half of the mouths of 300 children seven to fifteen years of age with a 2% sodium fluoride solution. The children received 7 to 15 treatments during the course of a year, with a 40% reduction in new caries. Those who received 15 treatments were afforded no greater protection than those who received 7 treatments. These authors suggested that one treatment might be sufficient.

On the other hand, Arnold, Dean and Singleton²⁸ found that one treatment with 0.5% sodium fluoride solution provided no protection to 94 coast guard cadets, with an average age of 19.6 years. The solution used was weaker than that used by Knutson and Armstrong but stronger than the Bibby solution, and the subjects were of an older age group.

It would seem, then, that multiple treatments of potassium or sodium fluoride solution of 0.05, 0.1 or 2% strength inhibited dental caries in children four to fifteen years of age, while a single treatment with 1% solution did not prevent dental caries in 19-year-old men. It is perfectly obvious that this field requires further exploration, although there is an indication that more than one topical application of fluoride solution may afford some protection against caries for the teeth of young children. Largent and Moses²⁹ observed no increase in the fluoride content of the urine or feces of subjects whose teeth were treated topically, so it may be assumed that harmful systemic effects will not result from this type of treatment by, or under, the supervision of a dentist.

Action of Fluorine in Caries Control

The nature of the caries-inhibiting properties of fluoride water is not understood. It is clear that continuous exposure to water containing as little as 0.5 p.p.m. of fluoride during the first eight years of life affords most persons a significant degree of protection against dental caries. Whether treatment of domestic water with fluoride will produce the same result will be determined by studies now in progress.

In the meantime, it is interesting to speculate about this curious phenomenon. If fluorine is the specific caries-inhibiting factor present in the water, it must, apparently, be incorporated

in the dental enamel to be effective, since it is necessary to ingest the fluorine during the period of tooth development or to have it applied to the surface of the tooth repeatedly in rather concentrated solutions, resulting in an adsorption of the fluoride by the enamel. The fluorine must function in one of two ways. It either modifies the tooth structure in a manner that confers upon it a degree of immunity to caries attack or else it serves to mitigate the potency of the attacking force itself. Since the presence of fluorine does render highly mineralized substances less soluble, it has been suggested that teeth rich in fluorine decay less readily than teeth deficient in fluorine because they are able to resist the acids which ordinarily produce tooth cavitation.^{14, 30}

On the other hand, we have convincing evidence that the acid-producing potential of the dental environment has been altered in fluoride water areas. It is not the purpose of this report to embark upon an involved discussion of the etiology of dental caries, but the peculiar relation between oral Lactobacilli and dental caries activity is of importance in a consideration of the fluorine-caries problem.

A consistent finding in the epidemiologic studies of dental caries has been the very low frequency of high saliva Lactobacillus counts in fluoride areas. These findings have been discussed in detail elsewhere,^{31, 32} but, as an illustration, attention is called to the bacteriologic studies conducted on the children in Galesburg and Quincy, Ill. The Galesburg municipal water assayed 1.8 p.p.m. of fluorine, and the Quincy water was practically fluorine free, 0.2 p.p.m. One hundred eighty-six saliva specimens were cultured in Galesburg and 209 in Quincy. The calculated dental caries rates for these groups were 189 and 636, respectively. The children twelve to fourteen years old who lived in Galesburg had approximately two carious permanent teeth per child, in contrast to six carious teeth per child in Quincy. Only 28, or 15%, of the Galesburg children had high Lactobacillus counts, as compared with 109, or 52%, of the Quincy children, so that the differences in the bacterial counts in these two cities were, roughly, of the same ratio as the differences in the caries rates. Since the Lactobacillus counts serve as a reliable index of the bacteriologic flora of caries, we have here an indication that the environmental factors of dental caries activity are modified in fluoride areas. If this is interpreted to mean that the attacking force is lacking then the teeth may not be considered, in a strict sense, to be immune

unless they are to be placed in the embarrassing position of resisting something that is not there.

How the fluorine operates to inhibit oral Lactobacilli, and very likely other bacteria which inhabit the mouth, is still a matter of speculation. Since fluorine is not excreted in the saliva, the action is not direct. A possible explanation is that trace amounts of fluorine on the oral surface of the enamel influence the character of the bacterial plaques on the teeth. It will be recalled that large subcutaneous doses of fluorine did not inhibit caries in rats, whereas fluorine fed by mouth was quite effective. This suggests that the fluorine must come directly in contact with the bacterial flora of the tooth in order to prevent caries activity. Fluorine is an enzyme inhibitor and, when it is present in sufficient strength, inhibits bacterial growth and acid production in the test tube. Whether the fluorine in dental enamel exerts a similar influence in the mouth is not known.

Summary

It is definitely established that fewer carious dental cavities occur in persons continuously resident in fluoride areas during the first eight years of life than in persons residing in fluoride-free areas. Their teeth contain more fluorine than the teeth of persons in fluoride-free areas and Lactobacilli do not flourish in their mouths.

There is some indication that fluoride, topically applied, may reduce dental caries in children.

From a public health standpoint, the treatment of domestic water with fluoride appears hopeful. Studies now under way should determine the efficacy of this type of treatment. Should the treatment of public water supply prove beneficial, children in rural areas might be benefited by internal medication with doses of sodium fluoride comparable to the amounts ingested in fluoride areas, or about 2 mg daily, as suggested by McClure.¹⁶

On the basis of information now available, the use of fluorides in dentifrices or mouthwashes is not justified.

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SURPLUS SCALES SUBSTANDARD

Caution in purchasing war surplus equipment, such as drug scales, is indicated by the announcement from New Jersey's Department of Weights and Measures that scales recently offered by a New York dealer do not meet the state's requirements. Officials point out that a low price is poor economy if equipment proves to be below regulatory standards.

OCCURRENCE OF OFFICIAL DRUGS IN PRESCRIPTIONS

by HENRY M. BURLAGE

UNIVERSITY OF NORTH CAROLINA SCHOOL OF PHARMACY

**SURVEY REVEALS EXTENT OF USE
OF N.F.-U.S.P. PRODUCTS; ENGLISH
NOMENCLATURE PREDOMINANT BUT
METRIC MEASURE IS LITTLE USED**

FIVE THOUSAND prescriptions received in 25 pharmacies in North Carolina were studied. These pharmacies were located in 24 different communities in 21 counties of the state. Two hundred prescriptions from each pharmacy were sampled: 50 on January 1, 50 on April 1, 50 on July 1, and 50 on October 1, thus allowing for seasonal fluctuations of demands for products.*

One phase of the study involved an examination of the prescriptions to ascertain the number of official products prescribed. These are divided into the following classes: (1) inorganic medicinal substances, (2) organic medicinal substances, (3) medicinal preparations and (4) vegetable drugs. The results are shown in Table I. Other studies relative to this survey have been reported elsewhere.^{1, 2}

TABLE I.—NUMBER OF INDIVIDUAL OFFICIAL
PRODUCTS IN 5000 PRESCRIPTIONS

Inorganic Medicinal Substances	59
Organic Medicinal Substances	128
Medicinal Preparations	188
Vegetable Drugs	9
Total Number of Official Products	384

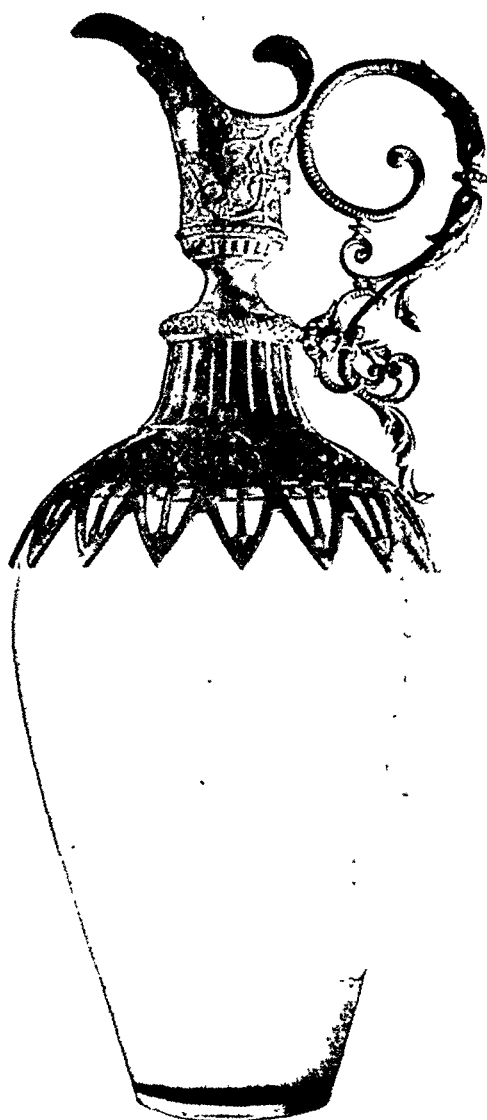
TABLE II.—FREQUENCIES OF CLASSES OF
OFFICIAL PRODUCTS IN FIVE THOUSAND
PRESCRIPTIONS

59 Inorganic Medicinal Substances	754
128 Organic Medicinal Substances	1625
188 Medicinal Preparations	1907
9 Vegetable Drugs	33

The frequencies of the classes listed in Table I are shown in Table II.

Of the number listed in this table, proprietary names were used one hundred and five times for official products.

The number of official products (384) is somewhat more than half of the total number of proprietary items (654) called for in the same number of prescriptions. However, of the proprietaries, only 44 items were prescribed over ten times in 5000 prescriptions, whereas 78



* The survey was conducted during 1943.

Miscellaneous Data

1. **VITAMIN PRODUCTS:** These products were called for 226 times under the manufacturer's name. Vitamins under official names were called for 233 times.

2. **LATIN IN THE PRESCRIPTIONS:** Considerable attention has been devoted to the discussion of the use of Latin in pharmacy and it seemed desirable to examine these prescriptions for the use of this nomenclature.

Classifying abbreviations presents an obvious problem. In this study, when there was clear cut evidence that an English word had been abbreviated it was thus classified; all others were assumed to be abbreviations of Latin words.

The survey indicates that:

794 prescriptions had English directions.

946 prescriptions had directions in English words and Latin abbreviations.

125 prescriptions had Latin directions.

615 prescriptions had directions in Latin abbreviations.

The remaining prescriptions had no directions or were not recorded in the copy of the prescriptions submitted.

3490 prescriptions had the body written entirely in English.

26 prescriptions had the body written entirely in Latin.

540 prescriptions had the body written in Latin and English combined.

98 prescriptions had the body written in Latin abbreviations.

342 prescriptions had the body written in English abbreviations.

82 prescriptions were entirely in English.

3. **METRIC SYSTEM OF WEIGHTS AND MEASURES:** Out of the 5000 prescriptions studied only 44 employed the metric system of weights and measures.

REFERENCES

1. Burlage, H. M., *American Druggist*, 110, No. 4, 62-63 (1944).
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A. M. A. COMMENTS ON PRESCRIPTION WRITING

TIMELY reminders on proper prescription writing have been published in the *Journal of the American Medical Association* (130:214, 1946). Pharmacists may wish to reprint the Journal's comments, given below, in mailings to their physicians:

"The best medical treatment is that fitted to the individual patient. Drug therapy, highly significant in most medical treatment, is secured by the prescription. As Sollmann aptly says, a prescription is 'an order for medicine sent by a physician to a pharmacist.' Some of the practical requirements for writing an effective and correct prescription are often neglected. The instructions for the pharmacist and patient must be legible and intelligible; this is why English is now preferred to Latin. The prescriber should use correct, descriptive names for the ingredients and not just their trade names; such description insures fewer misunderstandings. If an ingredient is official or otherwise open to manufacture by several firms, a firm name should be placed adjacent to the ingredient if the physician wishes

to show his confidence in any one manufacturer; otherwise any brand may be used to fill the prescription. The use of English abbreviations and numbers as designations for drugs should be avoided. Complex mixtures should not be ordered if simple ones will suffice. Unrelated substances such as purgatives and hypnotics are not properly included in a single prescription. They are best prescribed separately and timed in their administration to be most effective. The physician should be mindful of the frequency with which prescriptions are refilled without his knowledge. Thus he may limit the number of doses to the actual needs of the patient and state specifically on the prescription whether it can be refilled and, if so, how often. The importance of such directions, for example when barbituric acid compounds are prescribed, is obvious. Of course the pharmacist bears the responsibility of filling the prescription; when he is in doubt concerning the ingredients or directions, it is his moral responsibility to call the prescribing physician; to do otherwise invites disastrous results."

official products were prescribed over ten times. The 10 most frequently prescribed proprietaries ranged in frequency from 29 to 68 times, whereas the 10 most frequently prescribed official products ranged from 62 to 753 times in the 5000 prescrip-

tions examined in this North Carolina survey. Of the 384 official products, Table III indicates those that were used ten or more times in the 5000 prescriptions, listed in order of frequency of use.

TABLE III.—INDIVIDUAL OFFICIAL PRODUCTS USED MORE THAN TEN TIMES IN 5000 PRESCRIPTIONS

60-753 Times		10-35 Times	
1. Sulfathiazole Tablets	537 216	21. Sulfaguanadine Tablets	23 13 — 36
2. Sulfadiazine Tablets	753 206 105	47. Epinephrine HCl Tablets	16 2 — 18
3. Phenobarbital Tablets	311 66 106	48. Morphine Sulfate Tablets	8 10 — 18
4. Thiamine HCl Tablets (Elix.)	172 76 57	49. Salicylic Acid	17
5. Tr. Belladonna	133 99	50. Peppermint Water	17
6. Camph. Tr. Opium	99	51. Isotonic Solution NaCl	17
7. Co. Elix. Pepsin	71	52. Magma Bismuth	17
8. Acetylsalicylic Acid Tablets	63 7	53. Elixir I.Q.S.	16
9. Diethylstilbestrol Tablets	70 48 28	54. Fldext. Cascara Sagrada	16 16
10. Ferrous Sulfate Tablets	76 34 28 — 62	55. Ointment of ZnO	16
11. Mercurous Chloride Tablets	46 12 — 58	56. Theophylline Ethylenediamine Tablets	16
12. Sodium Salicylate Tablets	43 11 — 54	57. Co. Mixt. Opium and Glycyrrhiza	15
13. Sodium Bicarbonate	53	58. Glycerol Trinitrate Tablets	15
14. Tr. Nux Vomica	49	59. Nicotinamide	15
15. Sodium Bromide	44	60. Bismuth Subcarbonate	14
16. Tr. Hyoscyamus	44	61. Solution of KI	14
17. Sulfanilamide Tablets	27 13 — 40	62. Chalk Mixture	14
18. Boric Acid	39	63. Tr. Digitalis	14
19. Diluted HCl	38	64. Iron and Ammonium Citrates	13
20. Acid Ascorbic Tablets	20 17 — 37	65. Mixt. Rhubarb and Soda	13
		66. Potassium Iodide	13
		67. Lanolin	13
		68. Liquefied Phenol	13
		69. Calcium Gluconate	12
		70. Solution Potassium Arsenite	12
		71. Charcoal	12
		72. Magnesium Oxide	12
		73. Citrated Caffeine	11
		74. Aromatic Spirit Ammonia	11
		75. Syrup Hydriodic Acid	11
		76. Potassium Permanganate	11
		77. Codeine Phosphate	11
		78. Digitalis	11
		79. Tablets Calomel and Soda	11
		80. Chloral Hydrate	10
		81. Methyrosaniline HCl	10
		82. Sodium Sulfathiazole	10
		83. Solution Boric Acid	10
		84. Syrup Ipecac	10
		22. Acid Nicotinic Tablets	20 14 — 34 33 32 31 31 26 3 — 29 29 20 9 — 29 28 27 22 5 — 27 26 25 25 16 8 — 24 23 22 21 21 17 4 — 21 21 21 20 20 19
		23. Potassium Citrate	20
		24. Lactose	14
		25. Ephedrine Sulfate	34
		26. Elix. Terpin Hydrate and Codeine	33
		27. Acetophenetidin Tablets	32
		28. Glycerin	31
		29. Thyroid Tablets	31
		30. Methenamine Tablets	26
		31. Phenol	3
		32. Mild Silver Protein	29
		33. Codeine Sulfate Tablets	29
		34. Bismuth Subnitrate	20
		35. Ammonium Chloride	9
		36. Zinc Sulfate	—
		37. Atropine Sulfate Tablets	29
		38. Potassium Chlorate	28
		39. Ammoniated Hg Ointment	27
		40. Menthol	8
		41. Quinacrine HCl Tablets	—
		42. Quinine Sulfate Tablets	24
		43. Calamine Lotion	23
		44. Chlorobutanol	22
		45. Elixir Five Bromides	21
		46. Aromatic Fldext. Cascara Sagrada	17

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SOME RECENT ADVANCES IN BIOLOGICAL SCIENCE

MANY developments of interest to pharmacists were disclosed at the annual meeting of the Federation of American Societies for Experimental Biology held at Atlantic City in March. A program covering such varied interests can be reported only in part, points out A. PH. A.'s representative at the sessions, but some of the papers are of particular significance to the profession.

Antibiotics

The danger of microorganisms developing resistance to penicillin and streptomycin was emphasized by Dr. Hans Molitor of the Merck Institute for Therapeutic Research. When employing antibiotics, physicians should use large doses immediately so that bacteria are killed in a few days before such resistance can be developed, and the use of ointments, lozenges and tablets for minor diseases should be avoided.

A clue to the mode of action of penicillin was discovered by Drs. L. O. Krampitz and C. H. Werkman of Iowa State College. Evidence was found by these bacteriologists that penicillin interferes with the metabolism of nucleic acids or nucleotides in *Staphylococcus aureus*.

Bal

British Anti-Lewisite (Bal), which is 2,3-dithiopropanol, was a British wartime development in the control of arsenical war gas, particularly lewisite. Dr. Harry Eagle and co-workers at the Venereal Disease Research Laboratory of the U S Public Health Service, Johns Hopkins Hospital, showed that Bal injected intramuscularly, intravenously, or subcutaneously in aqueous or propylene glycol solution is effective in the treatment of acute and subacute mapharsen poisoning in rabbits. The antidotal action, Dr. Eagle said, is related to the ability of Bal to withdraw arsenic from its combination with the cells, and increase its urinary excretion.

Bal is unstable in aqueous solution, but solutions in peanut oil can be sterilized by heat with only a slight activity loss. Benzyl benzoate added to the peanut oil rendered the Bal easily miscible with the oil. Dr. Eagle recommended that the Bal be injected at 4-hour intervals for 4 doses and, in some cases, followed by daily

injection for six days. About 200 human cases of arsenic poisoning have been treated to date.

Dr. Arthur M. Ginzler, of the Chemical Warfare Service at Edgewood Arsenal, extended the work on Bal to show its effectiveness against mercury poisoning. Extensive kidney damage was produced by Dr. Ginzler in rabbits by the injection of mercuric chloride. Giving doses of Bal of 0.15-0.3 mg/Kg. five minutes later, resulted in complete prevention of the necrosis. If optimal doses were given, the damage was reduced materially even if therapy was begun as late as thirty minutes after the intravenous injection of mercury, Dr. Ginzler reported.

Antispasmodics

Current interest in the field of antispasmodic and related drugs was reflected in the discussions. Bradford N. Craver, Patricia Seip and Ann Cameron of the Ciba Laboratories disclosed a new and simple method of recording activity of the uterus in intact rabbits and cats. The method has the particular advantage that the same animals can be used for repeated tests if the operating is done aseptically.

Dr. Woodbury and his associates at the University of Georgia have developed methods of studying uterine activity in humans during dysmenorrhea and metrorrhagia. The techniques originating in their laboratory can be extended to the study of antispasmodic drugs for the treatment of dysmenorrhea. Dr. Woodbury disclosed the astounding fact that pressures in the uterus often reach 100 mm. of Hg in patients with dysmenorrhea during the relaxation phase, while during contractile periods pressures were as high as 300. In labor the highest uterine pressure recorded was 100, Dr. Woodbury said. It is interesting that dysmenorrhea symptoms could not be elicited by the administration of acetylcholine, histamine or pitocin but could always be attained by pitressin or uterine distention.

For many years allergy has been explained with some degree of satisfaction in terms of histamine liberation. If this theory be true, it would seem logical that a drug which could tie up histamine receptors in the cells and thus prevent histamine from reacting might alleviate symptoms attributed to allergen reaction. Such a drug is benadryl (β -dimethylaminoethyl benz-

hydriyl ether hydrochloride). Dr. Irving H. Page and Dr. Arda Alden Green of the Cleveland Clinic Foundation demonstrated its ability to prevent completely fatal asthma in guinea pigs which were breathing atomized histamine. These research workers showed that benadryl reduces the response to a wide variety of pressor, depressor, and vasoconstrictor substances.

Dr. W. A. Selle of the University of Texas confirmed such previous results and showed that 10 mg. of benadryl injected into a 600 Gm. guinea pig protected the animal against three times the minimum lethal dose of histamine. Sensitized animals were well protected against anaphylactic shock.

Salicylates

Dr. Byron B. Clark of Albany Medical College confirmed the work of others that salicylates can interfere with normal bleeding time by interfering with prothrombin production. Rats were found to be more susceptible than rabbits, while dogs were quite resistant. Methyl salicylate, aspirin, and sodium salicylate in equimolar doses had about the same activity. This action is potentiated in the presence of fever, a factor which may have important clinical implications.

Other analgesic-antipyretic drugs having prothrombinopenic activity are: antipyrine, aminopyrine, acetanilid, acetophenetidin, and cinchophen.

Diisopropylfluorophosphate

Originally intended as a war gas, diisopropylfluorophosphate (DFP) was described as a valuable tool in nerve physiology. Prostigmin (neostigmine), which when used as a drug exerts an action analogous to stimulation of the parasympathetic nervous system, is thought by many to owe its action entirely to its ability to inhibit cholinesterase, the enzyme which destroys acetylcholine. Others believe that the enzyme theory can account for only part of the action. Since DFP can completely and apparently irreversibly inhibit cholinesterase, the fact that prostigmin can still elicit some degree of parasympathomimetic action in the presence of DFP, gives this latter group of workers a more forceful argument. Certainly, DFP will help unravel many a mystery in autonomic pharmacology.

The irreversible character of DFP action would point to its possible use in cases of myasthenia gravis, but results at present show that at best it can be only an adjunct to prostigmin or physostigmine to ease the "letdown" as these

drugs wear off. Dr. Irving H. Leopold and Dr. Julius H. Comroe, Jr., of the University of Pennsylvania School of Medicine, hold out some hope for the use of DFP in glaucoma, a blinding eye disease.

Vitamins, hormones, vasodepressors, aviation medicine, bioassays and related phases of basic biological research were among other subjects discussed at the meeting by the foremost research workers in the United States and Canada.

Since this was the first convention held since 1942, there was a record attendance. The Federation is a super-organization embracing the American Physiological Society, American Society of Biological Chemists, American Society for Pharmacology and Experimental Therapeutics, American Society for Experimental Pathology, American Institute of Nutrition, and American Association of Immunologists.

—R—

REVISED ASPIDIUM STANDARDS WILL HELP EASE SHORTAGE

Current shortages of aspidium should be somewhat eased by changes in Pharmacopoeial standards announced by the Committee of Revision. This action will permit use of stocks of aspidium that do not have the "greenish color" heretofore required, if other standards are met.

Upon recommendation of the U. S. P. Subcommittee on Botany and Pharmacognosy, the description has been changed to read, "Internally pale green to weak greenish yellow or brown." The Subcommittee found that authenticated samples of aspidium which had lost all but traces of green color internally contained more than the minimum requirement of oleoresin and crude filicin. For potency reliance will therefore be placed upon oleoresin and filicin content, rather than upon color. It was also found during the investigation that *Dryopteris filix-mas*, the source of European aspidium, is not limited in range of distribution to Europe but extends into Asia.

Another change authorized in the Eleventh Sheet Supplement is the return to the prewar formula for liniment of soft soap, as given on page 257 of U. S. P. XII. The wartime use of oil of cedar leaf as the perfume, instead of oil of lavender, is abandoned.

Copies of the new supplement may be secured on request to the U. S. P. Committee of Revision, 4738 Kingsessing Ave., Philadelphia 43.

CONFERENCE WILL SEEK MORE UNIFORMITY IN DRUG LAWS

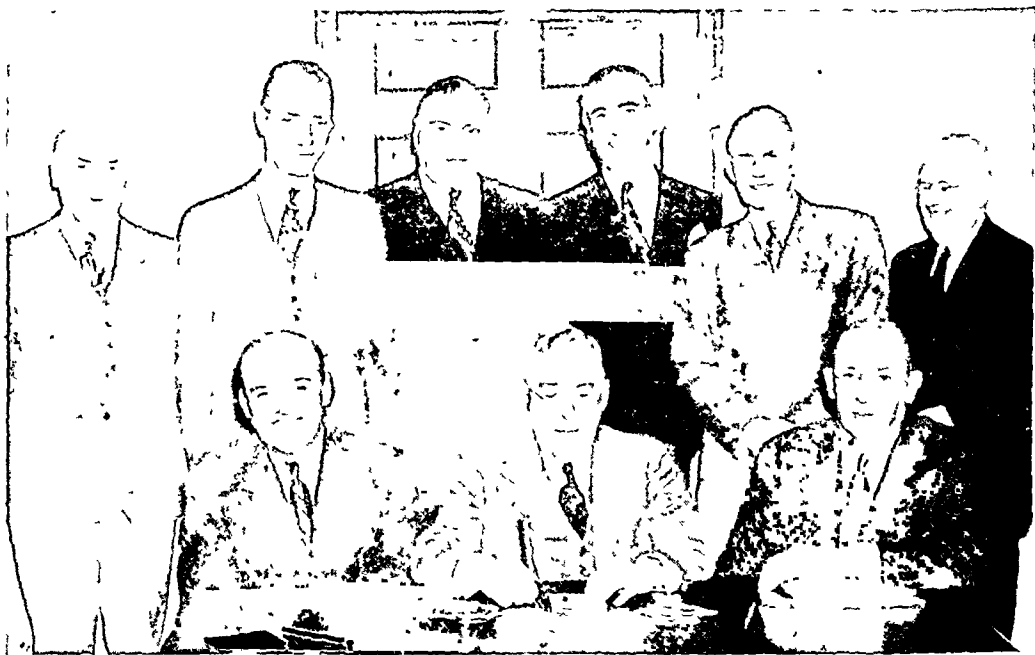
ACTION to bring about greater uniformity in laws affecting pharmacy and to reconcile differences among pharmaceutical groups on legislative aims has been inaugurated by the National Drug Trade Conference through a new committee representing the 9 participating associations.

Meeting at the A. Ph. A. headquarters building in March, the Committee decided upon the scope of its activities and set up a series of subcommittees to bring in reports for consideration at the second meeting scheduled for June 4.

Dr. Robert P. Fischelis, secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, was elected chairman of the Committee, with P. H. Costello, N. A. B. P. secretary, serving as vice-chairman and Ray Schlotterer, F. W. D. A. secretary, acting as secretary.

All types of drug laws will be considered by the Committee in preparing its report on "the feasibility of formulating uniform legislation," as requested by the Conference. These will include:

1. Drug and cosmetic phases of food, drug and cosmetic laws (Federal and state).
2. Narcotic laws (Federal and state).
3. Poison laws (state).
4. Pharmacy laws (state).
5. Barbiturate regulations (Federal and state).
6. Weights and measures laws (Federal and state).
7. Veterinary practice or livestock remedy laws.
8. State medical practice acts, as they pertain to pharmacy.



UNIFORMITY IN DRUG LAWS AND HARMONY IN LEGISLATIVE AIMS were two objectives of the program launched by the special committee of the National Drug Trade Conference at its first meeting at A. Ph. A. headquarters. Members attending were: (standing l. to r.) Dr. E. L. Newcomb, National Wholesale Druggists Association; J. L. Hammer, Jr., American Pharmaceutical Manufacturers Association; A. K. Barta, Proprietary Association of America; George H. Frates, National Association of Retail Druggists; J. Lester Hayman, American Association of Colleges of Pharmacy; Dr. Robert L. Swain (for P. H. Costello), National Association of Boards of Pharmacy; (seated) Ray Schlotterer, Federal Wholesale Druggists Association; Carson P. Frailey (for L. D. Harrop), American Drug Manufacturers Association; and Dr. Robert P. Fischelis, American Pharmaceutical Association.

9. Insecticide and fungicide laws (Federal and state).

10. Caustic poisons acts (Federal and state).

There was general agreement that state and Federal laws dealing with the same subject should be uniform to avoid confusing differences in labeling and regulatory provisions. Recommendations of the Committee will also bring about, it is hoped, a better agreement of thought and action to avoid conflict between different pharmaceutical groups on legislation introduced in the various states.

Of the ten classes of legislation, the following are now being studied by subcommittees: model state food, drug and cosmetic acts; model livestock remedy acts; caustic poison and other poison laws; narcotic laws; and state pharmacy laws with particular stress on the subject of restrictive sales. Subcommittees to study the other types of legislation will be appointed later.

To assure proper representation at meetings, the Committee authorized each participating organization to name a consultant who may also act as alternate for the regular committee member. When needed, specialists in various fields may be called in to consult with the Committee.

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KORAL TOOTH POWDER AND VIORAL CALLED UNACCEPTABLE

Koral Tooth Powder and ViOral, a vitamin preparation, are unacceptable to the Council on Dental Therapeutics, the American Dental Association has announced.

Koral Tooth Powder is essentially sodium bicarbonate. "The unwarranted and exaggerated therapeutic claims made for it," the Dental Association stated, "are against the interests of the public and of the dental profession."

The product ViOral has been promoted for a variety of supposed deficiency symptoms in dental diseases. "While the appearance of some of these conditions might be associated with dietary deficiencies," the Dental Association commented, "such is not always the case. Recovery from dental disease would not necessarily be accelerated by the administration of vitamins and, even in those instances in which recovery might be hastened, it is unlikely that such a mixture as ViOral would be the nutritional supplement of choice. . . . Because of their uninformative name and the unwarranted claims made for them, ViOral Tablets are not acceptable for *Accepted Dental Remedies*."

CARD BEARING R_x NUMBER IS RETURNED FOR REFILL

Patients requesting prescription refills who forget to return the container or throw it away constitute a recurring problem for the busy pharmacist. Consequently, some pharmacies enclose with the original prescription a dignified card containing the prescription number for convenient reference. The patient then brings in the card when a refill is necessary.

In the *Bulletin of the American College of Apothecaries*, Samuel R. Chechik of Madison, Wis., states that pharmacists who have used the system over a period of time find it a time saver and much worth while. It also adds an additional professional touch to a properly filled and packaged prescription.

NEW MOLD STRAIN DOUBLES YIELD OF PENICILLIN

A variant of penicillium that may double the production of penicillin has been obtained by research workers at the University of Wisconsin. Cultures of the new strain have already been supplied to a number of manufacturers.

The achievement came from ultraviolet irradiation of mold spores, which causes incompletely understood and unpredictable changes in the genes. X-ray treatment has a similar effect.

Peak productivity has been shown to be nearly 1000 units of penicillin per cc. of culture broth. In 1940 the yield obtained by the early British workers was only about two units from the same amount of broth culture. This was increased to an average of 169 at the Northern Regional Research Station of the U. S. Department of Agriculture; then increased again to 369 units by a variant produced by X-ray treatment of spores at the Carnegie Institution, Cold Spring Harbor, N. Y. It was these earlier variants which the Wisconsin workers used for the irradiation experiments.

By chance, an ultraviolet ray altered a spore in such fashion that the genes which control penicillin production by the mold had doubled in capacity—761 units per cc. of broth on the average with a high of 904. In contrast, a similar series of experiments in California ran up more than 60,000 tests without the fortunate results of the few hundred tests at Wisconsin.

Experiments are continuing, and penicillium mutants yielding two to five times more penicillin are foreseen as a possibility by Prof. W. H.

Peterson, one of the Wisconsin scientists who worked on the project. Even the present maximum yield of about 1000 units probably represents less than 1% of all the metabolic prod-

ucts of the mold, it is pointed out. Yet other molds are known to produce compounds as complex as penicillin in quantities equal to 5 to 10%.

OUTLINE OF A. PH. A. CONVENTION PROGRAM

THE tentative outline of the 1946 meetings of the A. Ph. A., N. A. B. P. and A. A. C. P., to be held at Pittsburgh's Hotel William Penn, Aug. 25-30, is as follows:

The American Association of Colleges of Pharmacy will begin its meetings on Sunday afternoon, August 25, and continue until 4 p.m., Tuesday, August 27.

The National Association of Boards of Pharmacy will begin its meetings on Monday morning, August 26, and continue until Tuesday, August 27, at 4 p.m.

At 4 p.m. Tuesday, August 27, the first session of the House of Delegates of the AMERICAN PHARMACEUTICAL ASSOCIATION will be held. On the same evening the joint banquet of the AMERICAN PHARMACEUTICAL ASSOCIATION American Association of Colleges of Pharmacy and National Association of Boards of Pharmacy will precede the first general session of the A. Ph. A.

Wednesday, August 28, will be devoted to one session of the House of Delegates and meetings of the Sections.

Thursday, August 29, will include a session of the House of Delegates, a general session and sectional meetings.

Friday, August 30, will be devoted to sectional meetings and the final General Session. The Convention will close at about 5 p.m. with the final General Session including installation of officers.

A more detailed program and the schedule of meetings for other related organizations will be announced later.

Delegates of state associations to the House of Delegates are asked to submit in writing any resolutions which their respective organizations wish to have

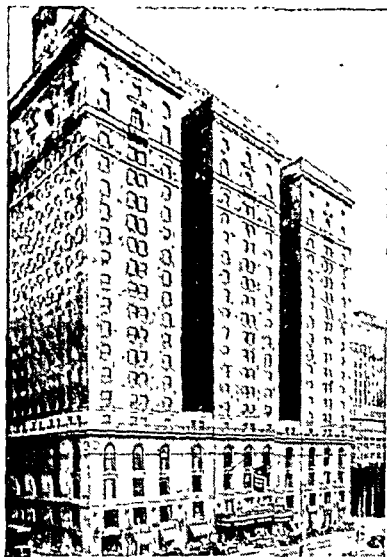
considered. All resolutions of the convention are passed upon by the House of Delegates, which also transacts most of the business of the convention and is the forum for debate on topics of importance to the profession. The delegates consist of representatives of national and state pharmaceutical associations, as well as representatives of the Sections and Local Branches of the ASSOCIATION.

In a memorandum to state association secretaries, Dr. Robert P. Fischelis, A. Ph. A. secretary, has urged that state delegates be named promptly, so that their credentials may be verified and pre-convention plans made. Voting delegates must be members of the AMERICAN PHARMACEUTICAL ASSOCIATION in good standing for at least two years prior to their selection as delegates.

Each affiliated state pharmaceutical association is entitled to one voting delegate and one additional delegate for each 500 dues-paid members of the A. Ph. A. who are members of the state association.

The convention program being arranged is expected to attract an unusually large attendance,

and pharmacists are urged to make hotel reservations promptly. Hotel William Pitt will house a major portion of those attending the sessions, and other Pittsburgh hotels will be in a position to handle the overflow. Wherever possible double rooms should be used, as the number of single rooms is very limited. Those attending the convention who are not required by special meetings, such as the Council or Executive Committee meetings of other associations, to remain in Pittsburgh on Saturday, August 31, should arrange to check out Friday, August 30.



PITTSBURGH CONVENTION HOTEL

GAPS IN CHEMICAL TABLE CLOSED

PRODUCTION by artificial means of chemical elements 43, 61, 85 and 87, now known to be extremely rare or non-existent in nature, was described by Dr. Glenn T. Seaborg, professor of chemistry at the University of California, in an address before the physical chemistry section of the American Chemical Society's Pittsburgh section. Dr. Seaborg was co-discoverer of the elements plutonium 95 and 96, identified during atomic bomb research.

With the manufacture and the investigation of properties of these four elements, all gaps in the table of chemical elements have been closed. Although all four elements have been reported discovered in earlier years by various experimenters, the researches described by Dr. Seaborg call into question earlier findings based on less positive methods of analysis.

The experiments with these elements were performed with unseeable and unweighable amounts by the "tracer" technique. The course of the elements in reactions is followed by means of their radioactivity instead of by chemical methods.

Radioactive isotopes of element 43 were produced by the bombardment of molybdenum with deuterons, the nuclei of heavy hydrogen atoms. Experiments by Drs. C. Perrier and Emilio Segre showed that the chemical properties of 43 resembled those of its heavier homolog, rhenium,

to a greater extent than they resembled those of manganese, the lighter element most resembling it.

Radioactive forms of element 61 were formed in experiments by both Drs. J. D. Kurbatov and Marion L. Pool and Drs. C. S. Wu and Emilio Segre. This element is a rare earth, with a behavior that is to be expected from a rare earth.

Radioactive element 85, whose isotope has an atomic weight of 211, was made by bombarding bismuth with 32,000,000 electron-volt alpha particles. Its general behavior is that of a metal, with little resemblance to the other halogens. Drs. Dale R. Corson, K. R. Mackenzie and Emilio Segre investigated its properties.

A radioactive form of element 87, given the name AcK, has been discovered resulting from the decay of actinium. This isotope discovered by Dr. M. Perey has a mass of 223 and lives but a short time. It decays with negative beta particle emission with a half life of 20 minutes. As was expected, it behaves like a heavy alkali metal.

[Earlier reports of the discovery of these elements were made, in the case of 43, named masurium, in 1925, and element 61, named illinium, in 1926, while 85, called alabamine, and 87, called virginium, were announced in 1931. The chemical literature records several earlier claims of finding some of these elements.]

TRACERS MOST IMPORTANT TOOL SINCE MICROSCOPE

Unlimited possibilities* for the application of radioactive tracers to scientific problems and to the treatment of disease were foreseen by Dr. Seaborg.

"Many biologists believe that artificial radioactivity has given biology and medicine what is probably the most useful tool for research since the discovery of the microscope," he said, "because almost all the elements and compounds in a biological system can be tagged and their course through living systems studied."

The chain reacting pile used in the production of plutonium for the manufacture of atomic bombs produces large amounts of neutrons of high intensity and as a result it is possible to produce in large quantity isotopes that are used as "tracers."

One of the most useful of the isotopes thus made is radioactive carbon 14, which has a half-life of some thousands of years. Since carbon is so important in the living world, being able to

trace a carbon atom through life processes with apparatus that detects its explosive decaying will provide new information on what happens during metabolic changes.

Radioactive triple-weight hydrogen, atomic weight 3, can now be produced by means of the intense neutron sources in the atomic bomb manufacture. It has a half-life of 30 years and can be used effectively to label hydrogen in organic compounds both in chemical processes and in either normal or pathologic life processes.

Radiophosphorus, radiosulfur and radioiodine are among the other radioactive isotopes that, according to Dr. Seaborg, will offer many opportunities for important research.

One interesting finding is that radiophosphorus accumulates in leukemic tissues, thus opening the possibility that it can be used in the treatment of this disease. Radiophosphorus would thus bombard the diseased tissues with beta rays to a greater degree.

The study of cancer is another possible use of tracers. As in the case of leukemia, Dr. Seaborg explained, "there is the therapeutic possibility of effecting the selective deposition of the radioactive material in the cancerous tissue."

"It has occurred to many investigators," he reported, "that it should be possible in the future to synthesize some compound containing a radioactive substance, this compound having the property of being selectively absorbed by the cancerous tissue so that the radioactive rays can act directly at this spot without giving harmful effects on the body's healthy tissue."

Tagging of bacteria with radioactive carbon 14 is a possibility, Dr. Seaborg said. A beginning has been made by tagging the tuberculosis bacillus with radioactive phosphorus but the experiments have not yet been completed.

Radioactive iodine has been used in the treatment of patients suffering from hyperthyroidism by Drs. J. G. Hamilton and M. H. Soley, while Dr. J. H. Lawrence has been successful in the application of radioactive phosphorus to the temporary control of polycythemia vera.

Industry will also benefit from radioactive materials resulting from the atomic bomb researches and the manufacture of plutonium, Dr. Seaborg predicted. Radioactive indicators will be used to follow the course of products and impurities in large industrial processes.

As an example of one chemical problem that could be studied with carbon 14 he cited the mechanism of catalytic cracking, isomerization and alkylation of hydrocarbons which are of profound interest to the oil industry.

Radioactive tracers may also help solve fundamental problems in genetics, such as the connection between the genes in the chromosomes that cause brown eyes and the actual deposition of the pigment in the cells of the iris.

THIOURACIL REPRINTS

A limited number of reprints of the paper, "Clinical Toxicity of Thiouracil," are still available. This report to the Council on Pharmacy and Chemistry of the American Medical Association is a "must" for every physician who may prescribe the drug. Following publication of the material for pharmacists in the February issue of *This Journal* (7:62, 1946), a great many pharmacists have requested reprints to distribute to their physicians. Send your order to the Journal, 2215 Constitution Ave., Washington 7, D. C. Twenty-five cents for each ten copies.

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PRODUCTS RECENTLY ACCEPTED BY THE
A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY

Council descriptions of drug products are published regularly in This Journal as they are accepted. Rules upon which the Council bases its action appeared in the November, 1945, issue (6:329, 1945) and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago 10.

MERCUHYDRIN SODIUM SOLUTION.—Meralluride Sodium Solution.—A sterile aqueous solution containing in each cubic centimeter approximately 119 mg. of mercurhydrin and 13 mg. of theophylline, adjusted with sodium hydroxide to a pH of about 7.5. Each 1 cc. of mercurhydrin sodium solution contains the equivalent of 39 mg. of mercury and 48 mg. of theophylline-U. S. P.

Actions and Uses: Mercurhydrin Sodium Solution is a mercurial diuretic claimed to be indicated in the edema of cardiorenal disease and of nephrosis, ascites of liver disease and other conditions in which a mercurial diuretic may be proposed.

It is claimed to be well tolerated systematically and significantly free from reaction at the site of injection when given intramuscularly. It is rapidly absorbed following intramuscular injection. It also is administered by intravenous injection.

The drug is contraindicated in acute nephritis and chronic kidney disease in which well-defined tubular and glomerular changes are present. Since mercury is known to give rise in sensitive patients to side effects such as stomatitis, gastric disturbance, vertigo, febrile reaction and cutaneous eruptions, it is suggested that initial tests and careful regulation of dosage be followed when mercurial diuretics are used. During prolonged administration the urine should be examined periodically for albumin casts and blood cells.

Dosage.—Depending on the condition of the patient and route and the frequency of administration, the usual dose of Mercurhydrin Sodium Solution is from 1 cc. to 2 cc. In view of occasional cases of idiosyncrasy to mercurials, the initial dose could be 0.5 cc. or less. Subsequent injections may be given twice weekly, as indicated by the condition of the patient. One investigator has recommended smaller doses repeated at shorter intervals and emphasizes the importance of observing daily water balance instead of weekly observations.

Tests and Standards.—

Mercurhydrin sodium solution is clear, colorless to pale yellow and odorless and possesses a bitter taste. The pH

7.4 and 7.6 at 25 C. Mercuhydrin protected from light.
 of mercuhydrin sodium solution responds to tests for the presence of urea and theophylline given under Evaporate 1 cc. of mercuhydrin in a tared porcelain dish and ignite: the residue responds to tests for sodium.

To 5 cc. of mercuhydrin sodium solution add 0.5 cc. of sodium acetate solution and 0.3 cc. of diluted acetic acid; dilute to 10 cc. with water and divide the solution into two portions. Add to one portion 0.2 cc. of sodium sulfide solution and compare with the other portion: only a very faint difference in coloration of the test solution is noticeable immediately.

Determine the mercury content of 2 cc. of mercuhydrin sodium solution, accurately measured, by the method given under Mercuhydrin-N. N. R.: the amount of mercury found is not less than 95 per cent nor more than 105 per cent of 39 mg. per cubic centimeter.

Determine the theophylline content of 5 cc. of mercuhydrin sodium solution, accurately measured, by the method given under Mercuhydrin-N. N. R.: the amount of anhydrous theophylline found is not less than 95 per cent and not more than 105 per cent of 43.6 mg. per cubic centimeter.

LAKESIDE LABORATORIES, INC., MILWAUKEE

Solution Mercuhydrin Sodium: 1 cc. and 2 cc. ampuls.

MANNITOL HEXANITRATE (See New and Nonofficial Remedies, 1945, p. 334).

The following dosage form has been accepted:

WILLIAM H. RÖRER, INC., PHILADELPHIA

Tablets Mannitol Hexanitate: 32 mg.

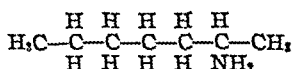
PENICILLIN (See New and Nonofficial Remedies, 1945, p. 214).

The following additional dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Penicillin Sodium Salt: 200,000 Oxford Unit vials.

TUAMINE.—Racemic 2-aminoheptane.—Racemic β -aminoheptane.— $C_7H_{17}N$.—M. W. 115.22. The structural formula of 2-aminoheptane is:



Actions and Uses.—Tuamine produces vasoconstrictive action and is a member of the group of compounds known as sympathomimetic amines. Inhalation of the vapors provides an effective method of treatment for acute rhinologic conditions and is of added usefulness when prolonged and repeated medication is necessary (see also general monograph on sympathomimetic amines). It should be used with caution by those who have cardiovascular disease. It is made available in an "inhaler" type of device.

Dosage.—One or two gentle inhalations through each nostril, repeated at hourly intervals if needed.

Tests and Standards.—

Tuamine occurs as a colorless to pale yellow liquid which boils within the range 138.5–142.5 C. It is sparingly soluble in water but freely soluble in ether, ethanol, chloroform and benzene.

At 25 C. tuamine exhibits a refractive index of from 1.4150 to 1.4200; a specific gravity of from 0.7600 to 0.7660 and a vapor pressure of approximately 4.8 mm. of mercury. The pH of a 1 per cent solution of tuamine is 11.45.

Dissolve 1 cc. of tuamine and 1 Gm. of potassium cyanate in 25 cc. of distilled water to which 5 cc. of 10 per cent sulfuric

acid has been added. Warm the solution on a steam bath for one hour; cool, filter, wash with distilled water and dry the crystals at 100 C.: the product melts at 127–129 C.

Transfer about 1 cc. of tuamine to a tared weighing bottle and weigh it accurately. Evaporate the tuamine on a steam bath to constant weight: the nonvolatile residue does not exceed 0.2 per cent. Dissolve 1 cc. of tuamine in 10 cc. of liquid petrolatum, U. S. P. XII: no turbidity is produced.

Weigh accurately about 1 Gm. of tuamine and dissolve it in 25 cc. of half-normal sulfuric acid. Titrate the excess acid with half-normal sodium hydroxide, using methyl red as the indicator. Each cubic centimeter of half-normal sulfuric acid is equivalent to 0.0576 Gm. of tuamine: the tuamine content is not less than 99.0 per cent.

ELI LILLY & CO., INDIANAPOLIS

Tuamine Inhaler: Each inhaler contains at the time of packing 2-aminoheptane carbonate, equivalent to 325 mg. of 2-aminoheptane, menthol, 32 mg. and ylang ylang oil, 65 mg.

Tuamine Inhaler.—

Transfer the contents of the inhaler to an ammonia distillation flask and rinse the container with water, adding the washings to the flask. Add 3 cc. of 40 per cent sodium hydroxide and distill the amine into 35 cc. of tenth-normal hydrochloric acid. Complete the determination as directed under tuamine. Each cubic centimeter of tenth-normal hydrochloric acid is equivalent to 0.01152 Gm. of tuamine: the amount of tuamine found is not less than 95 per cent nor more than 105 per cent of the amount claimed to be present at the time of packaging.

EPHEDRINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 283).

The following additional dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Solution Ephedrine Hydrochloride 5% and Procaine Hydrochloride 1%: 2 cc. ampuls.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 97).

The following additional dosage forms have been accepted:

THE WM. S. MERRELL CO., INC., LOESER LABORATORY DIVISION, NEW YORK

Solution Procaine Hydrochloride 1% W/V: 30 cc. and 100 cc. Each cubic centimeter contains procaine hydrochloride 10 mg. in isotonic solution of sodium chloride with chlorobutanol 0.5 per cent as a preservative.

Solution Procaine Hydrochloride 2% W/V: 30 cc. and 100 cc. Each cubic centimeter contains procaine hydrochloride 20 mg. in isotonic solution of sodium chloride with chlorobutanol 0.5 per cent as a preservative.

PERTUSSIS VACCINE COMBINED WITH DIPHTHERIA AND TETANUS TOXOIDS (See THE A. M. A. JOURNAL, Jan. 5, 1946, p. 31).

The following dosage form has been accepted:

SHARP & DOHME, INC., GLENOLDEN, PA.

Diphtheria-Tetanus-Pertussis Antigens Combined, Alum Precipitated: One 3 cc. vial (one 3 dose immunization) and one 10 cc. vial (three dose immunizations). Preserved with phenylmercuric nitrate 1:50,000.

DIETHYLSTILBESTROL (See New and Non-official Remedies, 1945, p. 428).

The following dosage forms have been accepted:
CARROLL DUNHAM SMITH PHARMACAL COMPANY,
 ORANGE, N. J.

Diethylstilbestrol (in Peanut Oil): 1.0 mg. per cc.: 1 cc. ampuls.

Tablets Diethylstilbestrol: 0.1 mg., 0.5 mg., 1.0 mg. and 5.0 mg.

PENICILLIN (See New and Nonofficial Remedies, 1945, p. 214).

The following dosage form has been accepted:
WINTHROP CHEMICAL CO., INC., NEW YORK

Penicillin Calcium: Vials containing 100,000 or 200,000 units.

PERCOMORPH LIVER OIL (See New and Non-official Remedies, 1945, p. 637).

The following additional dosage form has been accepted:

MEAD JOHNSON & COMPANY, EVANSVILLE, IND.

Oleum Percomorphum with Other Fish Liver Oils and Viosterol: 10 cc. bottles.

MANNITOL HEXANITRATE (See New and Nonofficial Remedies, 1945, p. 334).

The following dosage form has been accepted:
E. R. SQUIBB & SONS, NEW YORK

Tablets Mannitol Hexanitrate: 16 mg. and 32 mg.

GOLD SODIUM THIOSULFATE (See New and Nonofficial Remedies, 1945, p. 175).

The following additional dosage form has been accepted:

MERCK & CO., INC., RAHWAY, N. J.

Gold Sodium Thiosulfate: 75 mg. bottles.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 610).

The following additional dosage form has been accepted:

MEAD JOHNSON & COMPANY, EVANSVILLE, IND.

Tablets Thiamine Hydrochloride: 5 mg.

BACTERIAL VACCINE MADE FROM HEMOPHILUS PERTUSSIS (See THE A. M. A. JOURNAL, Jan. 5, 1946, p. 31).

The following dosage form has been accepted:
PARKE, DAVIS & CO., DETROIT

Pertussis Vaccine, Immunizing (Sauer): 6 cc. and 24 cc. vials. 15,000 million *H. Pertussis* per cubic centimeter.

RIBOFLAVIN (See New and Nonofficial Remedies, 1945, p. 614).

The following additional dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.
 Tablets Riboflavin: 10 mg.

SULFATHIAZOLE SODIUM (See New and Non-official Remedies, 1945, p. 213).

The following dosage form has been accepted:
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Sterile Sodium Sulfathiazole Anhydrous: 5 Gm. ampuls.

ASCORBIC ACID (See New and Nonofficial Remedies, 1945, p. 622).

The following dosage form has been accepted:
McKESSON & ROBBINS, INC., BRIDGEPORT, CONN.

Tablets Ascorbic Acid: 25 mg., 50 mg. and 100 mg.



A REPORT OF THE COUNCIL:

CHLOROQUINE, NONPROPRIETARY NAME FOR SN 7618

The Board for Coordination of Malarial Studies has requested the Council on Pharmacy and Chemistry to give consideration to the recommendation of a nonproprietary name for a new antimalarial compound known so far as SN 7618. It has the chemical structure of 7 chloro-4 (4-diethylamino-1-methyl-butylamino) quinoline. Chloroquine has been proposed as the nonproprietary name.

The Council has been informed that the compound is covered by a German patent which has been assigned to the Winthrop Chemical Company, although all of the work in developing its antimalarial properties and usage has been done by the government contractors working under the Office of Scientific Research and Development. The Council has been cognizant of the value of the co-operative studies which have been undertaken during the war. It feels that every effort should be made to encourage this and similar work and to make available as soon as seems expedient the results of the studies so that they may be applied for the good of humanity. The adoption and use of appropriate nonproprietary names for truly useful drugs would seem to be a step in this direction.

The Council has voted to recognize Chloroquine as a nonproprietary name for the antimalarial substance sometimes described as SN 7618.

The Hospital Pharmacist

INSTITUTE ON HOSPITAL PHARMACY

by DON E. FRANCKE

CHAIRMAN, AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

JULY 15 TO 19 SET AS DATES FOR ANN ARBOR SESSIONS ON HOSPITAL PRACTICE . . . EXPECTED TO ESTABLISH PRECEDENT FOR FUTURE PROGRAMS

AN Institute on Hospital Pharmacy to be sponsored by the AMERICAN PHARMACEUTICAL ASSOCIATION and the American Hospital Association in cooperation with the American Society of Hospital Pharmacists is to be held at the University Hospital, Ann Arbor, Michigan, July 15 through 19 of this year.

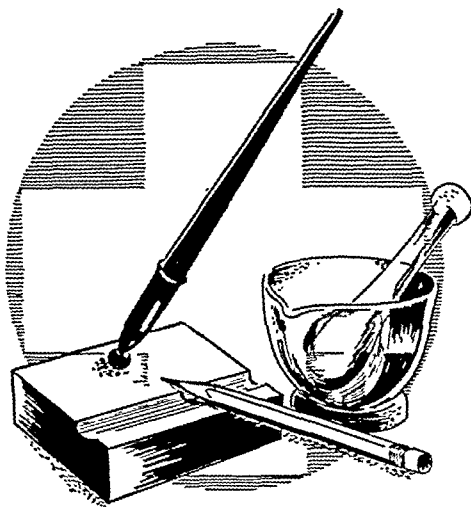
Characteristic of all progressive scientific groups is their propensity to maintain a current knowledge of their own and closely allied fields. One of the more effective devices for advancing professional knowledge is through the medium of institutes which may be considered as "refresher courses" for those actively engaged in a scientific or technical specialty. Of the several educational techniques in use, the institute provides the best medium through which pertinent information can be exchanged by practicing professional men and women in a short time at a small cost. Valuable not only to the individual but also to his institution, the informa-

tion and expanded viewpoint gained are reflected in the quality of service rendered the hospital.

Especially commendable is the collaboration of the three national associations having in common—although from different viewpoints—a vital interest in the practice of pharmacy in hospitals. Such cooperation will undoubtedly lead to a far greater degree of success than could be attained by any one or two of the organizations working alone.

Significant to the hospital field is this first institute which will provide a medium for exchanging information on the practice of hospital pharmacy and thereby result in better pharmacy service for our institutions. Equally significant is the opportunity offered to the pharmacist himself to develop and improve as a professional man or woman in the field of public health.

The program of the institute has been planned to cover a wide variety of subjects and at the same time to maintain a central theme about which the entire project will revolve. Scheduled to run for five days, the institute will consist of a series of lectures and demonstrations, three to be given in the morning and two in the afternoon, with a panel discussion of the day's program to be held in the evenings.



It is believed that the panel discussions will be among the most valuable parts of the entire series. For it will be at these discussions, characterized by informality and a spirit of free exchange of questions and ideas, that much of the more theoretical aspects of the program will be crystallized and made applicable to everyday situations. A site for the meetings has been selected that provides a schoolroom arrangement, encourages informality and invites audience participation.

Planned to meet the needs of pharmacists in small as well as large hospitals the program will cover hospital pharmacy policy and administration, the preparation of parenteral medication, pharmaceutical manufacturing and its application in hospitals of various sizes, teaching materia medica to nurses, group hospitalization plans and how they may affect pharmacy, and recent trends and developments in the field of new drugs. Scheduled for the first evening is a social period at which old acquaintances will be renewed and new ones developed. The final session will be a dinner at which certificates will be awarded to those attending all scheduled meetings.

The faculty will consist of seven hospital pharmacists and an approximately equal number of lecturers from allied fields. The complete program and faculty will be announced soon, when details are completed.

As agreed by representatives of the participating organizations at a recent meeting in Chicago, Dr. Hugo V. Hullerman, secretary of the Council on Professional Practice of the American Hospital Association, 18 East Division St., Chicago 10, will approve applications for attendance at the institute in conformity with the established eligibility requirements. The applicant must be a hospital pharmacist and he must be a member of the American Society of Hospital Pharmacists, which automatically requires him to be a member of the AMERICAN PHARMACEUTICAL ASSOCIATION, or his institution must be a member of the American Hospital Association.

The fee for the institute will be \$25. All room and meal expense, except for final dinner and social period, will be the responsibility of each enrollee.

Reservations for single, or twin-bed rooms at the dormitory reserved for those attending the institute may be made through Dr. Hullerman. An application blank and program will be mailed each member of the American Society of Hospital Pharmacists; others who are eligible may obtain them from Dr. Hullerman or Dr. R. P. Fischelis, secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Once the value of institutes on hospital pharmacy has been established by experience it is expected that annual meetings of this type will be held, widely distributed over the land to effect a strong, united, well-trained, well-informed corps of hospital pharmacists to function in our nation's hospitals.

—R—

A. S. H. P. OFFERS AWARDS FOR ESSAYS ON HOSPITAL PHARMACY

Unpublished manuscripts on hospital pharmacy and allied subjects will compete for cash awards in a contest announced by the American Society of Hospital Pharmacists.

The scope of eligible subject matter is broad. Contributions may deal with suggested long-range policies and plans for hospital pharmacy discussed from the standpoint of the individual institution, local or state activity, national plans, educational programs, legislative objectives or any other theme on hospital pharmacy the writer may select.

For the best entry \$50 will be awarded, with \$25 going to each of the two next best essays.

Entries should be limited to 5000 words, be typewritten in English, prepared in manuscript form, submitted in triplicate and mailed for receipt not later than July 1, 1946. Entries should be sent to the editor of the *Bulletin of the American Society of Hospital Pharmacists*, 1313 Ann St., Ann Arbor, Mich. Entries become the property of the Society and will not be returned.

OHIO HOSPITAL PHARMACISTS ELECT NEW OFFICERS

At the recent meeting of the Ohio Hospital Association in Columbus, the Ohio Society of Hospital Pharmacists elected John Miller, chief pharmacist of Aultman Hospital, as its president. Other hospital pharmacy officers named were: Roy F. Wise of Lima Memorial Hospital, president; Thomas Lolli of Cleveland Clinic, vice-president; Sister Jean Marie of St. Elizabeth's Hospital (Youngstown), treasurer, and Rose Lenga of Riverside Hospital (Toledo), corresponding secretary.

Lowell Ruff of Ohio State University is president-elect.

MINIMUM LIST OF BOOKS FOR A HOSPITAL PHARMACY

by EDWARD J. IRELAND

NEW ORLEANS COLLEGE OF PHARMACY, LOYOLA UNIVERSITY

SEVERAL years ago I reviewed a list of books which comprised the 1829 catalog of the library at the Massachusetts College of Pharmacy. Inasmuch as some of the books were in my own library I knew their content and from a scientific point of view it was clear that our modern pharmaceutical literature had developed remarkably since those early days in 1829.

I found myself sympathizing with the early pharmacists and students who had such a meager selection of professional literature. Then I realized that the list could not have been any different. Modern chemistry was still in its infancy. Physics was only found in volumes dealing with natural philosophy. Bacteriology was not a science and there was a paucity of literature in all the other sciences as well. Pharmacists were most interested in crude drugs; and their pharmacology and therapeutic literature, if judged by modern standards, was decidedly elementary. A cursory glance at any of these books reveals their elementary nature. But the pharmacist of that period purchased and used them.

When the chairman of this program* invited me to present this paper I wondered what stu-

dents and pharmacists of future generations will say when, browsing through old journals, they come across these suggestions. I shall feel perturbed, wherever I am at that time, to hear comments such as: "Why a minimum list of books for a hospital pharmacy? Were the hospital pharmacists unaware that a reference library which is not increasing in the number of useful books is thereby becoming obsolete? Surely hospital pharmacists were not satisfied with a minimum list." However, since I have visited a large number of our hospital pharmacies I am aware that a minimum list is necessary. Some may already have gone beyond what I consider to be a minimum list. Others need such a list to emphasize the importance and value of adequate reference material or to aid them in locating books to meet their needs.

MacEachern[†] has pointed out that the hospital should maintain an adequate pharmaceutical library. He specified the U. S. Pharmacopœia, National Formulary, New and Nonofficial Remedies, U. S. Dispensatory and reference

* Presented to the American Society of Hospital Pharmacists, 1944 meeting, Cleveland, O.

[†] *Modern Hospital*, 52: 102, 1939.



works on inorganic and quantitative chemistry, pharmacology, toxicology, bacteriology and a medical dictionary.

In his brief references to the library, MacEachern left the selection to the pharmacist. If the pharmacist is not personally interested in developing the library for the pharmacy, however, all the lists ever published will not help. If the chief pharmacist develops such an interest himself, and does not delegate this responsibility to someone else, he will become very discriminating in selecting purchases.

The purchase of books and journals for the pharmacy library should be directed with special attention to the particular problems which present themselves to the staff and to the type of service which the hospital pharmacy offers. You would not expect the same problems in a maternity hospital as in an ear, eye, nose and throat hospital or a skin and cancer clinic. Hence the literature in the library will be selected to aid the pharmacist in counseling the practitioner as to the best type of medication or to furnish adequate information in order that the pharmacist may overcome his own problems.

Here we shall discuss briefly volumes which I have found particularly significant and useful. Others might name comparable or related works to meet better their individual needs.

Most state pharmacy laws require the latest editions of the *United States Pharmacopœia* and the *National Formulary* because these two books contain the official standards for official medicaments. Hospital pharmacists who purchase the *United States Dispensatory* because they feel that this well-known book contains both the *National Formulary* and the *United States Pharmacopœia* are practicing false economy in more ways than one. If they wish the *United States Dispensatory* they should purchase it, but they should do so only after the *United States Pharmacopœia* and the *National Formulary* have been purchased. The latter two books carry more authority and prestige if you are called upon to discuss standards or formulas with members of the allied professions. Moreover, they include much data not reproduced in the *Dispensatory*.

It should not be necessary to state that if you wish to keep abreast of pharmaceutical progress in the official compendia it will be necessary to obtain the interim revisions of the U. S. P. and the supplements to the N. F. The former can be obtained from the U. S. P. Committee of Revision, 4738 Kingsessing Ave., Philadelphia 43, the latter from the Committee on National

Formulary, 2215 Constitution Ave., N. W., Washington 7, D. C.

Anyone who has ever used the A. Ph. A.'s *Pharmaceutical Recipe Book* will probably want all of the editions, of which there are three. A great many of the formulas have been changed as the editions were revised.

Dorland's *Medical Dictionary* is, in my opinion, the most complete and best illustrated.

One of the most useful little books will be Lange's *Handbook of Chemistry*. It is packed with very valuable chemical information for the hospital pharmacist.

Although Beckman's *Treatment in General Practice* is not directly pharmaceutical, there are so many suggestions in this book, and it is so widely used by physicians that it should be one of the books on the hospital pharmacy library shelf.

Those who have Gutman's *Modern Drug Encyclopedia and Therapeutic Guide* are well aware of its value, yet, to keep abreast of the field of proprietaries, one should subscribe to the quarterly known as *Modern Drugs* issued by the publishers of the encyclopedia at \$1 per year.

You will need pharmacology texts, the two most popular being Goodman and Gilman's *Pharmacological Basis of Therapeutics* and Sollmann's *A Manual of Pharmacology*. Both of these texts are good but many prefer the latter after learning to use it.

Best and Taylor's *Physiological Basis of Medical Practice* is the recognized text in physiology today, but if other texts are used in your locality it would be well to study or purchase the book which is the standard text in your state medical school.

Recently an excellent text in organic chemistry was published and you will be proud and happy to have it in your library. It is Fieser's new contribution and will prove very useful.

Pharmacists throughout the country have found the two Merck books valuable additions to their libraries: the *Merck Index*, 5th edition and the *Merck Manual*, 7th edition.

Pharmacists who are frequently asked for information concerning nutrition will find McCollum's *Newer Knowledge of Nutrition* accurate and of much assistance.

Todd and Sanford's *Clinical Diagnosis by Laboratory Methods* has been recognized as an ideal book for the laboratory technician. Since the pharmacy prepares the stains and the solutions for these technicians, it is necessary for the pharmacist to know the procedures which are used in order to provide a better service to the pathology department.

Remington's Practice of Pharmacy will be a valuable addition to your library. It is the oldest revised treatise on the practice of pharmacy and still proves most serviceable.

Many pharmacists have been expending time and energy looking for an authoritative text on alkaloids. Henry's *Plant Alkaloids* is the book for which they have been searching.

Woodman's *Food Analysis* will be of much assistance when you are looking for explanations and chemical procedures on fats, oils, milk, coloring agents, and extracts. Of course this book will never substitute for the authoritative three-volume work of Lewkowitsch or the newer, more comprehensive book by Morris B. Jacobs.

Anyone who has ever worked with certified dyes should thank the Conns. The fourth edition of their book, *Biological Stains*, will be welcomed by any pharmacist who desires to know more about dyes and stains.

While Everett's *Medical Biochemistry* is not as comprehensive as some of the older texts which dealt with physiological chemistry or biochemistry, this new text is being used in a large number of medical schools in this country and every hospital pharmacist should be familiar with it.

New and Nonofficial Remedies, better known as "N. N. R.," is published annually. Since physicians will be asking for Council-accepted remedies it is good pharmaceutical practice to have each volume of the N. N. R. because of frequent deletions and additions.

Incompatibilities by Nichols and Ruddiman

will sometimes assist you greatly in explaining incompatibilities which arise. It is worth the space in a small library.

Frequently, the hospital pharmacist will have volumetric analysis problems. Kolthoff-Furman will furnish you with the information to solve the problem.

Finally, I believe that Stitt, Clough and Clough's volume on *Practical Bacteriology, Haematology and Parasitology* will be appreciated in any hospital pharmacy library.

To this selection of books, listed below, I have added a list of journals which I have found especially useful. Space will not permit me to discuss each of these sources of important information, but the publisher will be pleased to send a sample copy in order to have you read and evaluate its contents.

A list of house organs is included, which you will receive without charge by writing to the respective publishers. Many times you will find excellent bibliographies in these publications, and you can subsequently obtain the original article if desired.

In conclusion, I should like to recommend the advice of one of pharmacy's outstanding scientists, the late John Uri Lloyd of Cincinnati, who stated that the best way to build a good library is to "purchase the book you want and forget how much you paid for it."

Those of you who expand your hospital pharmacy library will not only be helping yourselves and your institution but elevating the profession and building a heritage for those who follow.

Books

UNITED STATES PHARMACOPOEIA XII and interim revisions.

NATIONAL FORMULARY VII and supplements (also the bimonthly BULLETIN OF THE NATIONAL FORMULARY COMMITTEE).

UNITED STATES DISPENSATORY, 23rd edition, J. B. Lippincott & Co., Philadelphia.

PHARMACEUTICAL RECIPE BOOK III (also I and II).

Dorland—MEDICAL DICTIONARY, W. B. Saunders Co., Philadelphia.

Lange's HANDBOOK OF CHEMISTRY, 1944, Handbook Publishers, Sandusky, O.

Beckman's TREATMENT IN GENERAL PRACTICE, W. B. Saunders Co., Philadelphia.

Zinsser, Bayne-Jones—TEXTBOOK OF BACTERIOLOGY, Appleton Century Co., New York.

Gutman's MODERN DRUG ENCYCLOPEDIA AND THERAPEUTIC GUIDE, 2nd edition, New Modern Drugs, 49 W. 45th St., New York 19.

Goodman and Gilman—PHARMACOLOGICAL BASIS OF THERAPEUTICS, Macmillan Co., New York.

Sollmann's MANUAL OF PHARMACOLOGY, W. B. Saunders Co., Philadelphia.

Best and Taylor—PHYSIOLOGICAL BASIS OF MEDICINE, 10th edition, W. B. Saunders Co., Philadelphia.

CAL PRACTICE, 3rd edition, Williams & Wilkins Co., Baltimore, Md.

Fieser and Fieser, ORGANIC CHEMISTRY, D. C. Heath Co., Boston.

MERCK INDEX, Merck and Co., Rahway, N. J.

MERCK MANUAL, Merck and Co., Rahway, N. J.

McCollum, Orent-Keiles Day—THE NEWER KNOWLEDGE OF NUTRITION, Macmillan Co., New York.

Todd & Sanford's CLINICAL DIAGNOSIS BY LABORATORY METHODS, 10th edition (1939), W. B. Saunders Co., Philadelphia.

Remington's PRACTICE OF PHARMACY (in revision), J. B. Lippincott, Philadelphia.

T. A. Henry's PLANT ALKALOIDS, 3rd edition (1939), Blakiston Co., Philadelphia.

Woodman—FOOD ANALYSIS, 4th edition (1941), McGraw-Hill Co., New York.

Conn—BIOLOGICAL STAINS, 4th edition, W. F. Humphrey Press, Inc., Geneva, N. Y.

Everett—MEDICAL BIOCHEMISTRY, 1942, Paul B. Hoeber Publisher, New York.

NEW AND NONOFFICIAL REMEDIES, American Medical Association, 535 N. Dearborn St., Chicago 10.

Ruddiman and Nichols—**INCOMPATIBILITIES IN PRESCRIPTIONS**, 6th edition, John Wiley & Sons, New York.
 Kolthoff-Furman—**VOLUMETRIC ANALYSIS I & II**,

John Wiley & Sons, New York.
 Stitt-Clough and Clough—**PRACTICAL BACTERIOLOGY, HEMATOLOGY and PARASITOLOGY**, 9th edition Blakiston Co., Philadelphia, Pa.

Journals

Journal of the American Pharmaceutical Association, *both Scientific and Practical Pharmacy Editions*, 2215 Constitution Ave., Washington 7, D. C.
 Drug and Cosmetic Industry, 101 West 31st St., New York.
 Oil, Paint & Drug Reporter, Schnell Publishing Co., 59 John St. New York 7.
 Stain Technology, Biotech Publishing Co., Geneva, N. Y.
 Journal of Pharmacology and Experimental Therapeutics, Williams & Wilkins, Mt. Royal and Guilford Ave., Baltimore 2, Md.
 American Perfumer and Essential Oil Review, Chestnut & 56th Sts., Philadelphia 39.

American Journal of Pharmacy, Philadelphia College of Pharmacy and Science, 43rd at Kingsessing and Woodland Aves., Philadelphia.
 Journal of Laboratory and Clinical Medicine, C. V. Mosby Co., 3523 Pine Blvd., St. Louis.
 American Journal of Pharmaceutical Education, American Association of Colleges of Pharmacy, Univ. of Nebraska, Lincoln, Neb.
 American Professional Pharmacist, Romaine Pierson Publishers, 67 Wall St., New York City.
 N. A. R. D. Journal, 205 West Wacker Drive, Chicago 8.
 Journal of the American Medical Association, 535 N. Dearborn St., Chicago 10.

House Organs

Ciba Symposia, LaFayette Park, Summit, N. J.
 Scope, Upjohn Co., Kalamazoo, Mich.
 Seminar, Sharp and Dohme, Philadelphia.
 Modern Pharmacy, Parke Davis & Co., Detroit.
 What's New, Abbott Laboratories, North Chicago, Ill.
 Therapeutic Notes, Parke Davis & Co., Detroit.
 Tile and Till, Eli Lilly Co., Indianapolis, Ind.
 Physicians' Bulletin, Eli Lilly Co., Indianapolis, Ind.

Hospital Topics & Buyer, 43 E. Ohio St., Chicago, 11.
 Medical Economics, Rutherford, N. J.
 Bulletin of Lederle Laboratories, 30 Rockefeller Plaza, New York City 20.
 Squibb Memoranda, E. R. Squibb & Sons, 745 Fifth Ave., New York.
 Givaudanian, Givaudan-Delawanna, 330 West 42nd St., New York 18.
 U. S. Alcohol News, 60 E. 42nd St., New York.
 Victor News, 2012 Jackson Blvd., Chicago.

Additional Books

PHARMACY

Emil J. Belanger—**DRUG AND SPECIALTY FORMULARY**, Chemical Publishing Co., Brooklyn, N. Y.
PHARMACEUTICAL FORMULAS (2 volumes), Chemist and Druggist, 28 Essex Street, Strand, London W. C. 2, England.
 Gershenfeld's **BIOLOGICAL PRODUCTS**, Romaine Pierson Publishers, New York.
 DeNavarre—**CHEMISTRY AND MANUFACTURE OF COSMETICS**, 1941, D. Van Nostrand, New York.
 Spease—**PHARMACEUTICAL MATHEMATICS**, 2nd edition, McGraw-Hill, New York.
 Husa—**PHARMACEUTICAL DISPENSING**, 2nd edition, Husa Brothers, Publishers, Iowa City, Ia.
 Fischel's—**ARMY—PRINCIPLES OF PHARMACY**, 4th edition, W. B. Saunders, Philadelphia.
 Hager's **HANDBUCH DER PHARMACEUTISCHE PRAXIS**, 2 volumes (German), G. E. Stechert and Co., 31 E. 10th St., New York 3.
 Martindale's **PHARMACOPOEIA** (vols. I and II), Pharmaceutical Press, 23 Bloomsbury Square, London W. C. 1, England.
ART OF DISPENSING, Chemist and Druggist, 28 Essex St., Strand, London W. C. 2, England.
 Powers and Crossen—**SCOVILLE'S ART OF COMPOUNDING**, 7th edition, Blakiston Co., Philadelphia.
 Kremers and Urdang—**HISTORY OF PHARMACY**,

1940, J. B. Lippincott Co., Philadelphia.
 Stevens' **ARITHMETIC OF PHARMACY**, D. Van Nostrand Co., New York.
 Caspari-Kelly—**TREATISE OF PHARMACY**, 8th edition, Lea and Febiger, Philadelphia 6.
BRITISH PHARMACOPOEIA, 1932, G. E. Stechert and Co., 31 E. 10th St., New York 3.
BRITISH PHARMACEUTICAL CODEX, 1934, G. E. Stechert and Co., 31 E. 10th St., New York 3.
SQUIRE'S COMPANION TO THE BRITISH PHARMACOPOEIA, G. E. Stechert and Co., 31 E. 10th St., New York 3.
 Bennett and Cocking—**SCIENCE AND PRACTICE OF PHARMACY**, J. A. Churchill and Co., 40 Gloucester Place, Portman Square, London, England.
 Muldoon's **PHARMACEUTICAL LATIN**, John Wiley & Sons, New York.
DRUG AND COSMETIC REVIEW, 1942, Drug and Cosmetic Industry, New York.
 Dorfman's **PHARMACEUTICAL LATIN**, 1938, Lea and Febiger, Philadelphia 6.
ACCEPTED DENTAL REMEDIES, American Dental Assoc., 222 E. Superior St., Chicago.
 Rosenberg's **PHARMACOPENDUM**, G. E. Stechert and Co., 31 E. 10th St., New York 3.
 C. Rousseau's **POLYGLOTA**, G. E. Stechert and Co., 31 E. 10th St., New York 3.
 Dieterich's **NEUES PHARMACEUTISCHES MANUEL**,

G. E. Stechert and Co., 31 E. 10th St., New York 3.
 Grah's POLYGLOT PHARMACEUTICAL LEXICON, G. E. Stechert and Co., 31 E. 10th St., New York 3.

PHARMACOLOGY

U. S. Public Health Service—THE PHARMACOLOGY OF THE OPIUM ALKALOIDS, Superintendent of Documents, Washington 25, D. C.
 Bastedo's MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS, 4th edition, W. B. Saunders, Philadelphia.
 Jackson's EXPERIMENTAL PHARMACOLOGY AND MATERIA MEDICA, 2nd edition, C. V. Mosby Co., St. Louis.
 Gifford's OCULAR THERAPEUTICS, Lea and Febiger, Philadelphia 6.
 McGuigan's APPLIED PHARMACOLOGY, C. V. Mosby and Co., 1940, St. Louis.
 Wright's APPLIED PHYSIOLOGY, 7th edition, Oxford Medical Publications, New York.
 Ablsweide—PRACTICAL TREATMENT OF SKIN DISEASES, 1932, Paul B. Hoeber and Co., New York.
 Davidson—SYNOPSIS OF MATERIA MEDICA, TOXICOLOGY AND PHARMACOLOGY, 2nd edition, C. V. Mosby and Co., St. Louis.
 Grollman—ESSENTIALS OF ENDOCRINOLOGY, 1941, J. B. Lippincott Co., Philadelphia.
 Fabricant—NASAL MEDICATION, A PRACTICAL GUIDE, 1942, Williams & Wilkins, Baltimore, Md.
 McGehee and Green—A TEXTBOOK OF DENTAL PHARMACOLOGY, MATERIA DENTICA AND PHARMACOTHERAPEUTICS, 2nd edition, 1941, The Blakiston Company, Philadelphia.
 Prinz and Rickert—PHARMACOLOGY AND DENTAL THERAPEUTICS, 8th edition, revised by Edward C. Dobbs, 1941, C. V. Mosby and Co., St. Louis.
 Fantus—GENERAL TECHNIC OF MEDICATION, 3rd edition, 1938, American Medical Association, 535 N. Dearborn St., Chicago 10.
 Eddy and Dalldorf—THE AVITAMINOSES, 3rd edition, 1944, Williams & Wilkins, Baltimore.

PHARMACOGNOSY

Youngken—TEXTBOOK OF PHARMACOGNOSY, 5th edition, Blakiston and Sons, Philadelphia.
 Gathercoal and Wirth—TEXTBOOK OF PHARMACOGNOSY, Lea and Febiger, Philadelphia 6.
 Trease—TEXTBOOK OF PHARMACOGNOSY, Wm. Wood and Co., Mt. Royal and Guilford Aves., Baltimore, Md.
 Lloyd's PHARMACOPŒAL HISTORY OF OFFICIAL DRUGS.
 Youngken—TEXTBOOK OF PHARMACEUTICAL BOTANY, 5th edition, Blakiston and Sons, Philadelphia.
 Chamot and Mason—HANDBOOK OF CHEMICAL MICROSCOPY, vol. I, 2nd edition, John Wiley & Sons, New York.
 Flueckiger and Hanburg—PHARMACOGRAPHIA, 1872, G. E. Stechert and Co., New York 3.
 Greenish—MICROSCOPIC EXAMINATION OF FOODS AND DRUGS, Blakiston and Sons, Philadelphia.
 Schneider—MICROANALYSIS OF POWDERED VEGETABLE DRUGS, Blakiston and Sons, Philadelphia.

Wodehouse—POLLEN GRAINS, 1935, McGraw-Hill Publishers, New York.

CHEMISTRY

Morris B. Jacobs—CHEMISTRY AND TECHNOLOGY OF FOOD AND FOOD PRODUCTS, Vol. 1 (1944). Interscience Publishing Inc., New York.
 Jenkins and Hartung—CHEMISTRY OF ORGANIC MEDICINAL PRODUCTS, 1943, John E. Swift Co., Inc., St. Louis.
 Bentley and Drivei—TEXTBOOK OF PHARMACEUTICAL CHEMISTRY, 3rd edition, 1937, Oxford Press, Amen House, Warwick Sq., London E. C. 4, England.
 Jenkins and DuMez—QUANTITATIVE PHARMACEUTICAL CHEMISTRY, 1937, McGraw-Hill, New York.
 Sherman—CHEMISTRY OF FOOD AND NUTRITION, 1937, Macmillan Co., New York.
 Hawk and Bergheim—PRACTICAL PHYSIOLOGICAL CHEMISTRY, 1937, 11th edition, Blakiston and Sons, Philadelphia.
 Mathews—PHYSIOLOGICAL CHEMISTRY, 6th edition, 1939, Wm. Wood and Co., Mt. Royal and Guilford Aves., Baltimore, Md.
 Whitmore—ORGANIC CHEMISTRY, 1937, D. Van Nostrand Co., New York.
 Rogers—INORGANIC PHARMACEUTICAL CHEMISTRY, 1943, Lea and Febiger, Philadelphia 6.
 Findlay—RECENT ADVANCES IN CHEMOTHERAPY, 1939, Blakiston and Sons, Philadelphia.
 Fischl-Schlossberger—HANDBOOK OF CHEMOTHERAPY, 1933, Roebuck.
 Gildemeister and Hoffman—VOLATILE OILS, 3 vols., 1916, John Wiley & Sons, New York.
 Finnemore—ESSENTIAL OILS, 1926, D. Van Nostrand Co., New York.
 Simonsen—ESSENTIAL OILS, 1935, Oxford Press, Amen House, Warwick Sq., London E. C. 4, England.
 Lewkowitsch—CHEMICAL TECHNOLOGY AND ANALYSIS OF OILS, FATS AND WAXES, 6th edition, 1938, 3 vols., Macmillan, New York.
 Peters and Van Slyke—QUANTITATIVE CLINICAL CHEMISTRY, 1932, Wm. Wood and Co., Mt. Royal and Guilford Aves., Baltimore, Md.
 CHEMICAL ENGINEERING CATALOGUE, Reinhold Publishing Corp., 330 W. 42nd St., New York 18.
 Hackh—CHEMICAL DICTIONARY, 1937, Blakiston and Sons, Philadelphia.
 Van Ryn—DIE GLYKOSIDE, Gebrüder Borntraeger, Berlin.
 CHEMISTRY OF OPIUM ALKALOIDS, U. S. Treasury Department, Supplement Bulletin, No. 103.



M.S. IN HOSPITAL PHARMACY

A course leading to the Master of Science degree in hospital pharmacy has been established at Purdue University School of Pharmacy.

Science News Capsules

APPENDICITIS fatalities dropped by two-fifths between 1940 and 1943, the last year for which statistics are available. Credit for the achievement goes to the use of chemotherapy in cases complicated by peritonitis and to the educational campaign which warned the public against delay in seeking medical advice and against use of laxatives in case of abdominal pain.

UREA PEROXIDE dissolved in anhydrous glycerol has been used successfully by Dr. Ethan A. Brown of Boston and his colleagues as an antiseptic for wounds, skin infections and the like. Action of the new antiseptic, called Thenardol, is due to the liberation of hydrogen peroxide but does not have the latter's disadvantages of instability and transient action *in situ*.

POWER DIVE TESTS to learn just how fast the Lockheed P-80 can fly will be made by the Army, probably in June. A pilotless plane will be guided by remote control and a television camera will provide a constant picture of the instrument panel.

TELEVISION IMAGES with three times the clarity and brilliance heretofore achieved are reported possible from a new coating applied inside the face of the cathode ray tube. Made of aluminum, the coating is 1500 times thinner than a sheet of paper.

CAROTENE CONVERSION into vitamin A in the animal body is only one-sixth as efficient as has been assumed, guinea pig experiments at the University of California indicate. This may mean that less reliance can be placed on vegetables, such as carrots and lettuce, as a source of this vitamin.

ELECTRIC CAUTERY may now be used in chest surgery through elimination of explosive anesthetics, such as ether and cyclopropane. At the University of California Medical School, curare is being used to paralyze the respiratory muscles, so that breathing can be controlled, while nitrous oxide produces the necessary anesthesia. Previously, this double action could be achieved only by the explosive anesthetics.

PSYCHOLOGIC MALADJUSTMENT affects a majority of patients being treated for supposed physical ailments in medical office practice, according to Dr. Juergen Ruesch, research psychiatrist of the University of California Medical School. This conclusion was drawn from a study made for the Office of Scientific Research and Development. "These patients fall into the borderland between

health and disease," says Dr. Ruesch, "and because of the unfortunate division between physical and psychological medicine, little scientific attention has been paid to their problem. Frustrated and dissatisfied, they represent a social problem of considerable magnitude." Since there are too few trained psychiatrists to cope with such a huge number of such patients, there appears to be little hope for an early solution to the problem. Hope lies in prevention, which involves long-range educational policies.

COAL, AIR AND WATER were the substances upon which wartime Germany was largely dependent. Synthesized from these three fundamental raw materials were about 85% of the Nazi war machine's aviation fuel and motor gasoline, all but a fraction of 1% of its rubber, all of its nitric acid for explosives and 99% of its methanol, also used in explosives.

HEMOGLOBIN PRODUCTION may be speeded after severe hemorrhage by doses of two vitamin-chemicals: the *L. casei* factor, which is a form of folic acid, and β -pyracin, which is derived from pyridoxine. Promising results were obtained in experiments on hens conducted at Cornell University (*Science*, 103: 303, 1946).

U. S. AGAR production rose during the war from 24,000 pounds annually in 1940 to a current figure of 200,000 pounds annually. Formerly, such seaweed products had been imported from Japan and other countries.

THE "WALKIE-LOOKIE" may evolve from wartime, airborne television as the equivalent of the "walkie-talkie" voice instrument. Peacetime adaptation of the small television camera equipment is foreseen for such uses as (1) literal eyewitness news coverage, (2) television test pilots in experimental aircraft to eliminate the risk of life, (3) sight transmission of weather and traffic conditions to air pilots and marine navigators, (4) television eyes for industry and science that will present pictures of operations or experiments to distant observers, and (5) television exploration of hazardous regions with remote-controlled aircraft.

AMERICA CANNOT DEMOBILIZE OLD AGE, says Dr. George Lawton, director of the Old Age Counselling Center in New York. Jobs suited to their abilities rather than public financial help is the right answer to the problems of older people, he contends, pointing to clinical experience which indicates that, other things being equal, a man working

at a job he likes and can handle will live longer than a man who retires.

DRUGS that fluoresce can be traced by this property in their course through the body. Experiments have been conducted (*Science*, 103: 340, 1946) by injecting quinine subcutaneously into toadfish, then exposing the organs to ultraviolet radiation after dissection. Dr. Charles H. Taft of the University of Texas Medical Branch is continuing his experiments on the use of ultraviolet rays as a physiological tracer technique.

GAS TURBINES may revolutionize propulsion of American Navy ships. A secret experimental installation has been in operation since 1944. Greater cruising range is foreseen with maximum operating temperatures nearly double the limit of present steam turbines.

LARGEST WIND TUNNEL in the U. S., achieving velocities of 1500 miles per hour, is now in use in the Ames Laboratory of the NACA. It was designed to test guided missiles and jet- and rocket-propelled aircraft. Another supersonic tunnel, now nearing completion, will achieve speeds of 3.6 times that of sound.

METALLIC TITANIUM, a strong light metal, perhaps may become widely used in industry because of a practical process of extracting relatively pure ductile titanium from its ores. Titanium ranks fourth in abundance among metallic elements suitable for engineering purposes. Certain titanium compounds have heretofore had specialized uses, such as the pigment titanium dioxide.

DDT kills insects by poisoning their nerves but it does not act uniformly on all nerve tissue, researchers at Tufts College have found (*Science*, 103: 306, 1946). The characteristic tremors are due to an intense afferent bombardment of the motor neurons, experiments on cockroaches showed. There was no significant action on the central nervous system.

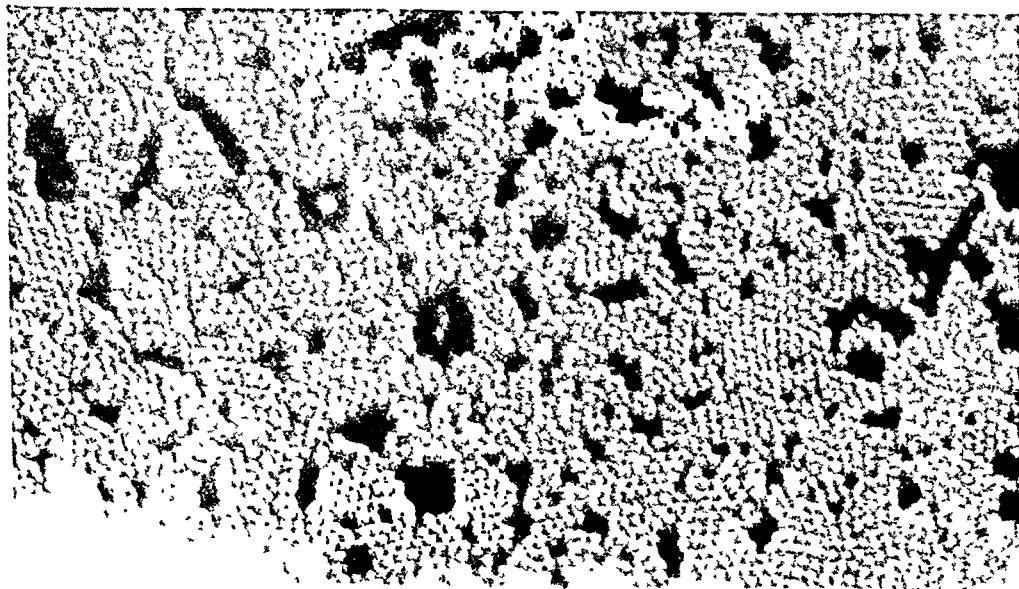
BENZENE HEXACHLORIDE, a new British

insecticide, may be the solution to the cotton boll weevil problem in the South. U. S. Department of Agriculture tests indicate that it is more effective against this particular insect than either DDT or the old standby, calcium arsenate. It was also more effective against cotton leafworms, plant bugs, cotton fleahoppers and cotton aphids, but less effective for the control of bollworms. The chemical is currently available only for experimental use.

AN ALL-WEATHER AIRLINE will be operated this summer for the first time by the Army Air Forces. Planes will defy the elements on a coast-to-coast schedule as an experimental "proving ground" for equipment developed to make flying safe in adverse weather.

ERADICATION OF SYPHILIS in a generation through use of penicillin is called "a pipe dream" by Dr. Evan W. Thomas of New York University College of Medicine. "No disease yet has been controlled entirely by treatment," he points out. "Both the psychological and social factors which favor promiscuity and poor sexual hygiene require further investigation if we are to get at the roots of the spread of syphilis."

THIN FILMS OF GOLD now make it possible to bring into range submicroscopic specimens otherwise beyond the reach of even the powerful electron microscope. This technique was used to reveal the interesting pattern of molecules of the bushy stunt virus shown in the electron micrograph below. The lower limit of usefulness for the electron microscope is determined ordinarily by lack of contrast rather than the smallness of the specimen. By depositing a film of gold obliquely on an ultra-thin specimen lacking definition, as in the illustration, higher elevations of the specimen then cast "shadows" to give a three-dimensional effect.



Colleges

THIRTY pharmaceutical scientists, comprising the faculty of the University of Illinois College of Pharmacy, have formally expressed their support of proposed legislation (S. 1720) to establish a National Foundation to provide Federal subsidies for research and education in the health sciences and other fields. In adopting the report of the College's Committee on National Legislation for Scientific Research, the faculty indicated that S. 1720, which is a compromise measure, embodies the most progressive thought on national science legislation available from scientific groups and should be enacted.

A tabulation of pharmacy scholarships, fellowships and graduate assistantships reported to the A. A. C. P. is available to prospective students in the January, 1946, issue of the *American Journal of Pharmaceutical Education*.

"Some Recent Advances in Chemotherapy and Pharmacology" was the subject of the Tenth Charter Centenary Lecture presented by the Fordham University College of Pharmacy in cooperation with the New York branch of the AMERICAN PHARMACEUTICAL ASSOCIATION on April 8. Speakers were Dr. Arthur P. Richards of the Squibb Institute for Medical Research and Dr. Sterling Brackett of the Stamford Research Laboratories.

Pennsylvania's Governor Martin has named Dr. Ivor Griffith, president of the Philadelphia

College of Pharmacy and Science, to the state's advisory health board.

Pharmaceutical courses in the curriculum of the Columbia University College of Pharmacy have been concentrated in the last three years of schooling, with freshman studies being primarily devoted to the general science and cultural courses. The move was taken to facilitate the transfer of students from nonpharmaceutical colleges during or following the freshman year.

Many of the curricula and many of the courses in our pharmacy colleges need to be modernized. Hugh C. Vincent, State College of Washington School of Pharmacy, agreed with this frequently heard contention after he made a quantitative survey of pharmacy curricula in 49 colleges. Results of the study—primarily obtained for a personal evaluation of the Pharmaceutical Syllabus—are reported in the *American Journal of Pharmaceutical Education* (10:11, 1946).

Scattered reports indicate that our pharmacy colleges are receiving more applicants than can be accommodated. As much as 90% of some freshman classes are veterans.

Reflecting the general trend in pharmacy colleges throughout the country, Oklahoma's School of Pharmacy reported a fall enrollment double that in the spring of 1945; this spring the enrollment doubled again.

Enrollment at Butler University College of Pharmacy (formerly Indianapolis College) has risen to about 200, approaching the prewar figure.

At the University of Connecticut College of Pharmacy the freshman class is the largest since the course was lengthened to four years in 1932, with the number of applicants several times the number that could be admitted. All applications for next fall are being held until June 30, when the Committee on Admissions will select those best qualified.

VETERANS CROWD PHARMACY COLLEGES

TOTAL enrollment in the nation's pharmacy colleges now approaches the prewar level despite the fact that more than half the present pharmacy students are freshmen. A report just released by the American Association of Colleges of Pharmacy shows that 7086 undergraduate students were enrolled for the 1946 winter term in 59 colleges, with 6 colleges not reporting. This figure represents at least 87% of the total enrollment in a comparable number of colleges in 1941, the last prewar year. Meanwhile, spot reports from deans indicate an increasing number of applicants.

At the time of the A. A. C. P. survey, nearly half the students were veterans.

Of the total number tabulated, only 463 were eligible for induction into the armed forces.

Nearly 2000 more students were reported enrolled for the winter term than had been reported in the fall, even though 6 colleges included in the earlier survey failed to report their winter enrollment.

There were 129 graduate students in the 59 colleges reporting.

University of West Virginia College of Pharmacy, like colleges in a number of other states, will probably limit enrollment next fall to state residents. The student body is already the largest in the history of the College.

Postwar expansion at Pitt's School of Pharmacy has brought six new members to the faculty staff—6 veterans and 2 women. Edward A. Reif has been assigned to the biology laboratory; George W. Meals, Robert Walkingshaw and John E. Lehnhardt to the chemical laboratory; and Miss Anna M. Stuchell and Mrs. Gizella B. Segin to the pharmaceutical laboratory.

A new scholarship fund for graduate study has been established at the University of Pittsburgh School of Pharmacy through a grant by the George A. Kelly Co.

At Creighton University College of Pharmacy, Frank Ferraro, one of the College alumni, has been appointed instructor in pharmacognosy. Mr. Ferraro was awarded the bronze star while serving in the Army.

Dr. Loyd E. Harris, formerly a lieutenant colonel in the Army, is now professor of pharmaceutical chemistry at the Ohio State University College of Pharmacy. Before the war Dr. Harris was a member of the faculty at the University of Oklahoma School of Pharmacy, where he originally took his undergraduate work in pharmacy.

Two faculty members have recently accepted posts in hospital pharmacy: Dr. W. Arthur Purdum, formerly of the University of Maryland School of Pharmacy, is now chief pharmacist at Johns Hopkins Hospital; Julian M. Wells, of the University of California College of Pharmacy, is chief pharmacist at the University's Hospital Pharmacy.

A new chapter of Kappa Psi, pharmaceutical fraternity, has been established at the St. Louis College of Pharmacy and Allied Sciences. Sixteen students were installed at the inaugural ceremonies on March 19.

The Alumni Association of the Columbia University College of Pharmacy has arranged a seminar for practicing pharmacists which will be held at the College May 28 and 29.

—R—

PHARMACY HELPS CONTROL SPREAD OF SMALLPOX IN WEST,

• Pharmacists were among the Navy personnel made available to west coast public health agencies early in April to help in the vaccination program against Oriental smallpox, which reached epidemic proportions in the Seattle area.

Eastern pharmaceutical manufacturers flew supplies of vaccine to the threatened areas to control the spread of the disease.

A. Ph. A.

Branches

LOCAL BRANCHES

PHILADELPHIA—At the March meeting, Dr. J. D. McIntyre, president of Dr. D. Jayne and Sons, was named president of the branch for the ensuing year. Others elected were: Dr. Madeline O. Holland, managing editor of the *American Professional Pharmacist*, first vice-president; John E. Kramer, registrar of the Philadelphia College of Pharmacy and Science, second vice-president; Robert L. McNeil, Jr., of McNeil Laboratories, secretary-treasurer; and Paul Wilcox, of Sharp and Dohme, delegate to the national convention.

NEW YORK—Clarence Linton, Teachers College, Columbia University, spoke on "Special Problems of Veterans Under the G. I. Bill of Rights" at the February meeting of the branch. Jesse Goldbloom of the Veterans' Administration, New York, spoke on "Important Features of the Amended G. I. Bill of Rights," and Robert R. Gerstner closed the meeting with the talk, "The Practice of Pharmacy as a Field for the Veteran."

S. A. Dreyer, chairman of the Committee on Education and Legislation, presented a report which dealt with prescription writing, the anti-divisiveness bill pending before the New York legislature, the wage and hours bill hearings, and the alumni seminar to be held at Columbia University College of Pharmacy on May 28 and 29. The final report of the Remington Medal Dinner Committee was also presented and the Committee was discharged with thanks.

The 1946 officers of the New York branch are F. D. Lascoff, president; Gustave Bardfeld, vice-president; Harry Kaye, treasurer; and F. J. Pokorny, secretary.

CANAL ZONE—At the January meeting of the branch, William E. Johnson and Winton A. Webb reported on their interview with the Chief Health Officer of the Panama Canal concerning higher professional classifications for pharmacists on the Isthmus. Their report was encouraging and a committee consisting of Mr. Webb, Everett R. Kimmel and Lynn Light was appointed to compile the necessary facts and figures to justify higher classifications.

The officers of the branch for 1946 are William E. Johnson, president; William F. Grady, vice-president; Thomas E. Cady, secretary; and A. Clay Sandusky, treasurer.

BALTIMORE—W. A. Purdum was recently elected president of the Baltimore branch. Irvin Freed is the new vice-president and F. S. Balassone, secretary-treasurer.

STUDENT BRANCHES

UNIVERSITY OF ILLINOIS—"Things are really pepping up with the G.I.'s back" according to Elizabeth Grembowicz, newly elected secretary of the student branch. Other officers are Doris Hill, president; Ray Dauphinais, vice-president; and Arnold Rife, treasurer. The membership of the branch is increasing rapidly and publication of a branch newspaper is under way.

ST. JOHN'S UNIVERSITY—A series of colorful films on essential oils was presented by Fritzsche Brothers to the student branch at the College of Pharmacy during a recent meeting. The effect of the war on the essential oil industry, the comparison of the type of labor involved abroad and here, and the trend in the United States toward mass production were explained in an introductory talk.

"Keep up with the periodicals" was the motto proffered by Robert Mechler, president of the Alumni Association of St. John's College, who was guest speaker at the meeting on March 11. He stressed the importance of pharmacists having a thorough knowledge and background of their field and associated fields and emphasized that the man with accurate, ready information is the successful man.

LOUISVILLE COLLEGE OF PHARMACY—Patrick J. Cain has been elected president of the recently reorganized student branch. Alfred Casper is the new vice-president; Rose Marie Dunn, secretary; and Florence Kreitman, treasurer.

RUTGERS UNIVERSITY—Science Day, a public event scheduled for May 17, will culminate an active program conducted by the student branch during the past school year. Highlight of the first semester was Pharmacy Night, a social event designed to bring together the students and state and local leaders in the profession. Both business and social meetings were held each month. Some of the features at these sessions were a series of motion pictures on anesthesia, lectures, and a glass blowing demonstration, reports Miss Theodora Decker, branch president.

ST. LOUIS COLLEGE OF PHARMACY—The new officers are Robert Moore, president; Bernard Mellburg, vice-president; Martha Shackelford, secretary; and Harold Crall, treasurer.

—R—

Mrs. Roy Bird Cook, wife of A. Ph. A.'s Council member and former president from West Virginia, has been appointed state historian and archivist.

Typical Days

FROM THE SECRETARY'S MARCH DIARY

—1st—

SPRING is in the air and reminds us that summer with its heavy schedule of convention activities is not far behind. The mail brings many an invitation to speak here and there, but with conflicting dates and a calendar already filled with necessary home work and earlier obligations, it becomes harder and harder to plan the most effective use of time.

Most encouraging is the monthly membership report which indicates that the 9000 mark has been passed, thanks to the splendid cooperation of many members and the efficient help of a loyal staff.

—2nd—

Fire in a house across the river illuminated the Jersey countryside late at night with volunteer companies doing an excellent job to prevent its spread to nearby homes. There is nothing like a common danger to bring out the possibilities of helpful cooperation. One could wish for more of the same in everyday affairs locally, nationally and internationally.

—4th—

An early conference with the architects and the painters to decide on color schemes for the halls and rooms and learned what a Dado is in the lingo of decorators. At lunch with Lt. Col Nelson and Maj. Johnson of the Army Pharmacy Corps

—5th—

More conferences with the architects who are planning where to locate a flag pole for the only flag-less building on Constitution Avenue in Washington, D. C. Most of the day at the desk in strange surroundings while the regular office receives its first coat of paint. Again observed how splendidly these artisans go about their work. No evidence of killing time here and every stroke of the brush a master stroke by a man in love with his work, reminding us of the story of the three hewers of stone at the site of a building operation. Said a passerby to the first of these: "What are you doing," and the answer was "cutting stone." The same question to the second workman brought the reply "working for a living." But the third man, intent and earnest in his work with hammer and chisel, replied "I am helping to build a cathedral."

—6th—

A pleasant visit with Dean Rudd who was in town for the annual "Science Talent Search" awards which have so greatly stimulated the interest of our youth in scientific pursuits. Also, a visit from Roy

Koch who now leaves C.P.A. to join William R. Warner & Co., and John McDonnell who left C.P.A. while it was still W.P.B. and now gives much time to Schering Co. This day also marks the replacement of the old bottled water cooler in the hallway by a modern Norge refrigerating unit that works well.

—8th—

Pharmacy takes on new form and authority in the Veterans' Administration as Dean W. Paul Briggs takes the oath of office as chief pharmacist and director of pharmaceutical affairs. Many a long distance telephone request for information from scattered places, including New York, Philadelphia, Columbus, O., Madison, Wis., and able to give satisfactory replies to all.

—10th—

Another Sunday given over in part to the pharmaceutical affairs of New Jersey and it is interesting to observe the effect of closer contact with the problems of the 48 states upon what goes on at home.

—12th—

Most of the day spent in reviewing problems involving direct contact of pharmacy with public health activities in general.

—13th—

After a busy morning at the desk, met with Du Mez and Little at the office of the American Council on Pharmaceutical Education in Baltimore to discuss the value and importance of pharmaceutical syllabi to pharmaceutical education. Perusal of the views of other accrediting agencies and spirited discussion of the problem led to the conclusion that a compulsory pharmaceutical syllabus need not be an accreditation requirement in the light of recent progress in pharmaceutical education.

—14th—

And now off on the 1 p. m. train for New York for the annual dinner of the Drug, Chemical and Allied Trades Section of the New York Board of Trade at the Waldorf-Astoria, where 2000 men in all walks of pharmacy and the drug industry gathered to hear Gen. L. R. Groves tell what could now be revealed of the atomic bomb project. And very glad to see so many old and new friends, including

G. A. Pfeiffer, Edward R. Gay of W.P.B. fame and literally hundreds of others.

—15th—

All morning at the Pennsylvania Hotel in New York with visits from our "Adman" Charles O'Malley and later Prof. Meuser of West China University who is in America on furlough and has an interesting story to reveal of many obstacles overcome and a long-range program for the education of the Chinese in American pharmacy.

—19th—

Today came the members of the special committee appointed by the National Drug Trade Conference to endeavor to bring harmony into the views of various branches of the drug industry and the profession of pharmacy with respect to Federal and state legislation affecting all concerned. Being adorned with the chairmanship of this illustrious group will bring additional gray hairs, but there seemed to be sufficient enthusiasm and concentration on the problems involved to augur well for results in some directions.

—20th—

A welcome visit from President Moulton, whose son received the coveted Johns Hopkins M.D. at Baltimore yesterday in the presence of a proud Mother and Dad. We reviewed the itinerary of Dr. Moulton's proposed trip to the far West to visit state association conventions in California, Oregon, Washington, Montana, Wyoming, Colorado and Utah during June.

Later to dinner with A. Ph. A.'s two illustrious Georges, Beal and Moulton, and Mrs. Beal adding real charm to the occasion. Then for a three-day conference on A. Ph. A. affairs until George Moulton left for Baltimore.

—21st—

A staff meeting with Council Chairman Beal in attendance, which always adds authority, wide experience and wisdom to the deliberations. Decisions reached on many a publication problem.

As workmen began the pointing of the white marble exterior and the granite approaches to our building, there came a tinge of sadness when news was circulated among the staff that one of the pair of cardinals, which have made the evergreens on the grounds their year-round home, suddenly flapped wings for the last time against the library window. This time it was not to suggest the need for food, but rather to remind that even cardinals are not immortal.

—22nd—

And now another trip to New York after a hectic morning at the desk. This time to sit with the Board of Directors of the American Social Hygiene Association where problems of budget and activities are similar to ours. One marvels at the extent of the activities of this organization which is a tribute to the organizing genius and statesmanship of Dr. Snow, the keen insight of Dr. Walter Clarke into the social and medical problems of venereal disease control, and the loyal cooperation of staff and

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directorates in both planning and execution.

—24th—

Part of another Sunday devoted to listening to plans for a proposed Health Congress for the state of New Jersey.

—25th—

After a busy day with mail galore on every conceivable subject—pharmaceutical and otherwise—from all parts of the globe and in many languages, a visit to Garfield Hospital where Mrs. Kittie Burt, efficient bookkeeper at A. P. H. A. headquarters, is recovering from an operation.

—26th—

A pleasant surprise visit from E. W. Gibbs of the Alabama Board of Pharmacy and later came Prof. Orr of Ohio State University, still in the uniform of a naval officer, but soon to return to his teaching. These are days of some commotion in the library and museum, for the painters are on their last lap and great care is needed to cover books and cases while the lead is spread on walls and ceilings.

—27th—

This morning a visit from Thomas E. Cady on his way from the Canal Zone to his home in Nebraska. His term of office as A. P. H. A. local branch secretary in the Canal Zone was marked by excellent programs and fine cooperation with headquarters.

—29th—

Today a rush trip to Hackensack, N. J., and return to lend a hand in proceedings brought by a supermarket operator to compel the N. J. Board of Pharmacy to grant a permit to compound prescriptions. The decision will be made by the State Supreme Court and there are many fundamental issues involved, with trends toward merchandising in the average pharmacy scheduled to play quite a part in the final decision.

Dr. J.

SUSPENSION OF SULFADIAZINE

A palatable suspension of sulfadiazine, developed by pharmacists Bain Chiba and George L. Phillips of the University Hospital Pharmacy at Ann Arbor, Mich., has the following formula:

	Gm./cc.
Sulfadiazine powder.....	62.5
Pectin.....	7
Sodium citrate.....	75
Benzaldehyde.....	0.2
Zephiran chloride sol., 12.5%	1
Syrup.....	500
Orange flower water.....	200
Distilled water, q. s.....	1000

Rub the pectin until smooth with a small amount of syrup. Add the remainder of the

syrup. Add the other ingredients, having first dissolved the sodium citrate in the orange flower water. Mix thoroughly and pass the mixture through a homogenizer.

This formula, reported in the *Bulletin of the American Society of Hospital Pharmacists*, provides in each 4 cc. of suspension: 0.25 Gm. sulfadiazine and 0.3 Gm. sodium citrate. The latter is included to make the urine alkaline, thus preventing crystalluria.

SUN-KRAFT LAMP UNACCEPTABLE TO A. M. A. COUNCIL

The Council on Physical Medicine of the American Medical Association has reaffirmed its stand that the Sun-Kraft "Cold Quartz Ultraviolet Ray Therapy Lamp" is unacceptable (*J. Am. Med. Assoc.*, 130: 493, 1946).

Radiometric findings showed that "the ultraviolet output of the Sun-Kraft model A-1 lamp, in total intensity, does not meet the Council's requirements for acceptability for use either (1) as a sun lamp (also in spectral quality) for home use or (2) as a therapeutic lamp prescribed by a physician for home use or (3) as an ultraviolet disinfecting lamp.

The Council's adverse report was also based on "scientifically incorrect, misleading (even the name 'Sun-Kraft' is misleading), and unfair sales promotion; the unsubstantiated claims made; and also because of the recommended inhalation of ozone, which is known to be highly toxic and irritating to the bronchial tract."

PRODUCTION OF DENTIFRICES

In one year the principal manufacturers of dentifrices produced 25,000,000 pounds of toothpaste, 10,000,000 pounds of toothpowder, and 1,000,000 pounds of liquid tooth cleanser. These quantities were packaged in approximately 296,000,000 marketable units. Figures cited were obtained by the War Production Board in a survey covering the year 1941. In releasing the data, C. P. A.'s Chemicals Division estimates

that the firms reporting account for about 85% of total U. S. production of bulk material and marketable units.

DENTAL PRODUCTS VOLUME TOTALS \$300,000,000

Dental products constitute an annual volume of \$300,000,000 when the dentist's office supplies and equipment are included, according to a compilation of statistics prepared by Dental Survey Publications. The volume in each class of products is estimated as follows:

Dental supplies, equipment and materials sold to dentists.....	\$100,000,000
Dental laboratory volume...	70,000,000
Dentifrices.....	70,000,000
Mouth washes.....	18,000,000
Tooth brushes.....	35,000,000
Denture adhesives, cleansers, etc.....	4,800,000
Miscellaneous, including diet reinforcement preparations, anodynes, etc.....	7,200,000

TOOTHBRUSH SHOULD BE SMALL WITH STRAIGHT-TRIMMED BRISTLES

To be effective for cleaning teeth a toothbrush should be compact and simple in design with relatively small, straight-trim bristles, Dr. H. Berton McCauley of Washington, D. C., reports in a paper authorized by the Council on Dental Therapeutics (*J. Am. Dent. Assoc.*, 33: 283, 1946).

A survey by the American Dental Association has shown that the professionally preferred brush should also have a straight handle and tufts of equal length. Sharp-angled handles make manipulation difficult and uneven tufts transmit uneven forces to the teeth and gums, thus promoting soft tissue injury, unnecessary abrasion and inefficiency, Dr. McCauley said.

Although recognizing the need of some varia-

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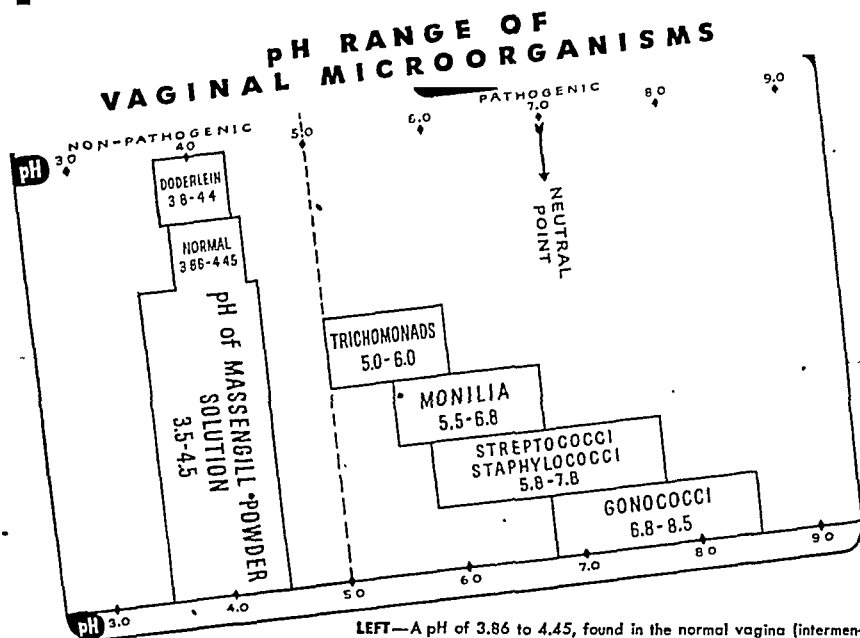
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pH Control



LEFT—A pH of 3.86 to 4.45, found in the normal vagina (intermenstrual period), favors the growth of harmless Döderlein bacilli, normal inhabitants of the vaginal tract. Massengill Powder solution presents a pH of 3.5 to 4.5.

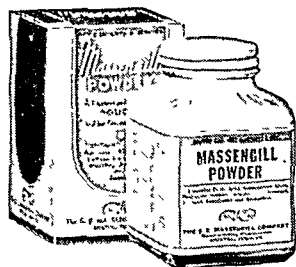
RIGHT—The pH range, 5.0 to 9.0, most favorable to the development of pathogenic organisms.

SINCE the average woman wants and needs advice regarding a proper douche, her physician is confronted by the problem of choosing an effective preparation which at the same time is safe, noncaustic and nonirritating. Massengill Powder may be recommended with assurance because it combines therapeutic efficacy, preventive action and hygienic value, with virtual freedom from irritant properties. Its particular advantage lies in control of vaginal pH.

The normal vagina is protected

against the influence of pathogenic organisms by a pH incompatible with their growth. Hence restoration of a normal pH presents the simplest, most direct form of vaginal therapy. Massengill Powder, by providing the desired pH, represents a powerful antibacterial weapon.

Due to its effect upon vaginal pH and to its cleansing action, Massengill Powder solution is equally suitable for use in personal hygiene and in the therapy of a wide range of vaginal affections.



MASSENGILL POWDER

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tion to meet individual requirements, the following toothbrush specifications are recommended for most adults: over-all length $6\frac{1}{2}$ inches, with a head $1\frac{1}{4}$ inches long and $\frac{3}{8}$ inches wide; two rows of tufts, each row 1 inch long and containing 6 tufts spaced $\frac{1}{8}$ inch apart. Each tuft should be about $\frac{1}{2}$ inch long. In most cases, stiffness of bristles should be "hard."

Slightly smaller brushes of "medium" stiffness are recommended as generally satisfactory for adolescents and children.

Also of special interest to pharmacists is Dr. McCauley's conclusion that the majority of American people still do not brush their teeth and that half of them do not even own a toothbrush.

Manufacturers' statistics show that only 106 million brushes were available to civilians in 1944, the last year for which full statistics are available. This, however, represents a major increase over the 70 million brushes Americans purchased in 1939, the last normal peace year. Approximately 220 million brushes would be required, it is pointed out, to supply two brushes yearly for each person in the United States who is more than two and less than sixty years of age.

DENTAL REMEDIES

recently accepted by the
COUNCIL ON DENTAL THERAPEUTICS
AMERICAN DENTAL ASSOCIATION

Admission to Accepted Dental Remedies means that a product and the methods by which it was marketed at the time of consideration were not found to be in violation of the published rules of the Council on Dental Therapeutics. A summary of the rules appeared in THIS JOURNAL, 7:153 (April), 1946. Accepted products are reconsidered periodically.

Penicillin and Related Preparations*

Penicillin Sodium Salt—Abbott, in vials containing 100,000 and 200,000 Oxford Units.

Penicillin Calcium Salt—Abbott, in vials containing 100,000 and 200,000 Oxford Units. Manufactured by Abbott Laboratories, North Chicago, Ill.

* *Accepted Dental Remedies*, Ed. 11, p 162

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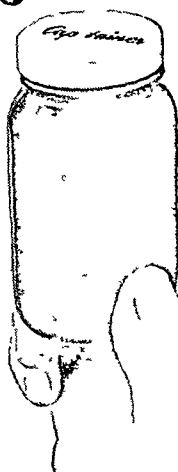
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- Packed 1 Dozen Inner Cart.—12 Doz. to a case



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Look for the supplementary statement "Manufactured by Heyden Chemical Corporation" on your pharmaceutical manufacturer's label of parenteral Penicillin in vials.

Vials of 100,000 units, 200,000 units and 500,000 units each.

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Benzaldehyde • Benzotates • Benzoic Acid • Benzyl Chloride • Bromides • Chlorinated Aromatics • Medicinal Crossols • Formates • Formaldehyde • Formic Acid • Glycerophosphates • Medicinal Guacacols • Hexamethylenetetramine • Paraformaldehyde • Parahydroxybenzoates • Penicillin • Pentoerythritols • Salicylates

Journal of the

AMERICAN PHARMACEUTICAL ASSOCIATION

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NARCOTIC CONTROL OF BARBITURATES

REPRESENTATIVE Edith Rogers, gentlewoman from Massachusetts (as they quaintly put it in Congress), has a

bill pending before the House (H.R. 6178) that would place barbiturates in exactly the same category as narcotics. This drastic measure, we believe, is neither required by the nature of the drugs nor by the widely publicized misuses.

In brief, the bill would amend Federal narcotic law to:

1. Add a definition of barbiturates to definitions now listed for narcotics; and also specifically designate barbiturates as narcotic drugs;
2. Require narcotic tax on barbiturates;
3. Place those who handle barbiturates under provisions for registration and license fees which apply to narcotic dealers;
4. Provide additional penalties for repeated offenses in handling barbiturates, under the same provisions which apply to those who illegally traffic or conspire to traffic in narcotics;
5. Provide for confiscation and disposal of barbiturates seized by the government from offenders, under the provisions which apply to narcotics; and also enlarge the scope of the penalty against ships carrying unmanifested narcotics to include barbiturates.

There is plenty of evidence that something must be done to curb the misuse of barbiturates. All of us must agree to that. Derelictions of a few practicing pharmacists have reflected too much of the odium of the current barbiturate situation onto retail pharmacy as a whole. Thus, the protection of the profession as well as vital public health considerations demand that present inadequate legal control (such as unrestricted prescription refills) and illicit distribution outside of pharmacy, be corrected promptly.

This does not mean that barbiturates must be declared narcotics under Federal law, with the attendant reams of records, added expense to both the professions and the patient, and staggering administrative and policing problems for the overburdened Bureau of Narcotics. To make barbiturates narcotics by fiat, whereas they are not in fact, seems to us a poor way to attack the problem at hand. If the legislation were passed, any drug that has undesirable prop-

erties supposedly could be legislated a narcotic.

We believe that H.R. 6178 is important legislation and a new departure that must be approached with extreme caution—at least until other types of barbiturate control are shown to be inadequate. Most states have only recently become sufficiently aware of this specialized problem to attack it boldly with the necessary special legislation. We do not look for strong support of the Federal proposal, but the A. Ph. A. is following the situation closely.

At the barbiturate conference called by the AMERICAN PHARMACEUTICAL ASSOCIATION in October, 1945, we heard no strong support from representatives of any of the government agencies or health professions for putting barbiturates under either the Federal narcotic laws or a facsimile thereof. At the last joint conference of the A. Ph. A. and N. A. R. D. executive bodies there likewise was support of more effective control on the state level. The A. Ph. A. legislative committee is now at work on a model state law which would rigorously protect the public from the misuse of barbiturates without placing the burden of narcotic procedures on pharmacy and medicine.

If the profession agrees that this approach is the right one, it is urgently necessary that a positive program and suggested legislation be ready by November of this year for the 1947 state legislatures. It must be a plan for barbiturate control upon which organized pharmacy and medicine, both state and national, can agree and which they will jointly support. This will require the participation and understanding of each state pharmaceutical association and its members. If we cannot promptly agree on a coordinated effort to solve the barbiturate problem it certainly will be done promptly for us.

Meanwhile, the scare campaign in the public press regarding barbiturates continues unabated. As pharmacists we must scrupulously avoid implicating the profession in this situation. In states that do not now control barbiturates properly by law, we must keep in mind that dispensing the drugs without a prescription is nevertheless a violation of the Federal Food, Drug and Cosmetic Act. In states that do not restrict barbiturate refills, we must conscientiously check with physicians when there is reason to doubt that the patient is continuing to take the drug under direct medical supervision. We must clearly recognize that these drugs—usually so helpful in rational medical therapy—can kill, and can have tragic unsocial results when used promiscuously by the layman.

CLEAN HOUSE!

Sirs:

Application is herewith made to renew my membership in the AMERICAN PHARMACEUTICAL ASSOCIATION. It is difficult for me to understand why every registered pharmacist is not a member—not for reasons merely to feather their own caps but rather to elevate pharmacy to the professional status to which it rightfully belongs. . . .

President Moulton has requested that suggestions accompany applications. Even though much of what follows is repetitious and echoes your objectives, it is presented conscientiously, earnestly, and with sincere hope of successful accomplishment.

CLEAN OUR HOUSE OF:

1. Unprofessional merchandising.
2. Turnstile stores and emporiums which only degrade the profession.
3. Non-pharmacists filling prescriptions.
4. Promiscuous refilling of dangerous drugs.
5. Haphazard, indefinite drug laws.

GIVE US:

1. A truly *strong* A. PH. A.—one to which it's not only an honor and a privilege to belong but also one that demands its members to uphold all of its ideals and by-laws or to suffer expulsion.

2. Uniform, national drug laws.

3. Far more enlightenment of the public concerning the pharmacist's education and professional service.

. . . The last thing we want is a "Petrillo," but unless something is done soon to organize and clean house, vigorously and nationally, retail pharmacy may well become a mere trade in the eyes of the public. No sane person would study for four years to work such long hours and receive such low pay without the rights and privileges which their education and certificate are supposed to guarantee.

. . . I implore the AMERICAN PHARMACEUTICAL ASSOCIATION to correct today's evils which can destroy pharmacy . . . correct them at all cost.

Evansville, Ind.

ROBERT W. WILEY

GREETINGS FROM GREECE

Sirs:

We are exceedingly happy and we feel particular joy for this hearty and friendly contact with you, which we owe to Mr. [Vincent] Norelli, an excellent cooperator and a good friend who is now in our country. Mr. Norelli communicated the scientific and social activities of your ASSOCIATION to us.

The Athens Pharmaceutical Association in due appreciation of the precious service rendered by Mr. Norelli to our country and especially to pharmacy, proclaimed Mr. Norelli its first honorary member.

As Greeks we use this opportunity to express our deep gratitude to you for the great help given us by your brave and glorious country, our ally during the dark years of occupation.

Therefore, may we request that you kindly give the hearty regards of all of us Greek chemists to our American colleagues and our request that you contribute to the support

of the rights of our small but brave country who sacrificed everything to the struggle for freedom and independence.

ANAST. YANNAKOPOULOS, ALEX. TSITSONIS,
Secretary President
Pharmaceutical Association of Attico-Beotia
Athens, Greece

FORMULA OF SCHAMBERG'S LOTION

Sirs:

We noted the recent inquiry in the PRACTICAL PHARMACY EDITION for the formula of Schamberg's Lotion. The preparation prescribed by dermatologists in this area under that title is as follows:

Menthol.....	0.3
Phenol.....	2
Zinc oxide.....	10
Lime water,	
Olive oil, aa, q. s.....	120

Chula Vista, Calif.

O. W. GUILBERT

CONSCIENTIOUS SUPPORT

Sirs:

Enclosed you will find my dues with subscription to the JOURNAL, which I enjoy reading very much. I can think of no better way to support the organization than to give it my wholehearted cooperation—surely a membership would be as little as could be expected . . . for the splendid work the ASSOCIATION is doing.

Topeka, Kan.

RICHARD F. BRANT

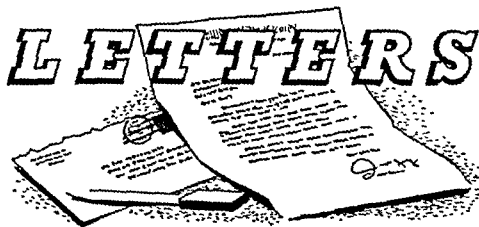
OUR CAREFUL READERS

Sirs.

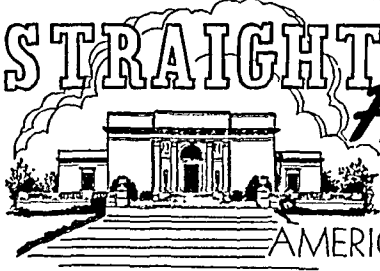
. . . No wonder the "pharmacist" looks so serious on the cover of the March issue: he's wondering how in the "heck" he is going to get all that solution into a two-ounce bottle.

Waynesville, N. C.

J. L. COBB



STRAIGHT FROM HEADQUARTERS



by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

LAST month attention was directed in this column to the very important and fundamental departure from established custom involved in following the directions of the Federal Food and Drug Administration to place certain warning notices on the labels of prescriptions.

Following a conference with Commissioner Dunbar of the Food and Drug Administration, we addressed a letter to him on this subject which is quoted at some length below. The Commissioner's reply has now been received and is quoted in full below. This reply indicates an appreciation on the part of the Food and Drug Administration of the problems involved and clears the atmosphere in so far as the transfer of *general warning notices* to prescription labels is concerned.

It will be recalled that Trade Correspondence 6-A, issued by the Food and Drug Administration, was headed "Drugs Dispensed upon Prescriptions not Exempt from Warnings Requirement." The opinion expressed by the Administration dealt almost entirely with the drug thiouracil, but since the heading was couched in general terms it was taken by many readers to mean that all warnings now required on the labels of *drugs supplied for self-medication* would also have to appear on the labels of *physicians' prescriptions*. It is very reassuring to be informed officially that such is not the case.

Dr. Dunbar's letter states:

"This does not mean . . . that all warning notices that the manufacturer may elect to place on commercial packages of drug items must be copied on the prescription labels of drugs dispensed by pharmacists on physicians' prescriptions. Certainly those warnings directed to the physician rather than to the patient need not be transferred. Only such warnings as are necessary for the protection of patients who are under the physician's care need be transferred from the manufacturer's labeling to that of the package dispensed upon prescription."

However, Commissioner Dunbar's statement

that "recent developments in the accelerated research programs which have given great impetus to chemotherapy may quite logically be expected to bring about certain changes in the distribution of drugs," places the pharmaceutical profession on notice that it may have to adopt new methods of procedure in meeting official labeling requirements.

But, any departure from the present procedure in the labeling of prescriptions must take cognizance of the total welfare of the patient as well as satisfaction of the letter of the law. Pharmacists have had long experience in dealing with physicians and their patients. They have a point of view and practical suggestions to offer in the handling of problems of this kind and it is the intention of the AMERICAN PHARMACEUTICAL ASSOCIATION to present such viewpoints and suggestions while continuing to urge proper compliance with the law and regulations.

Excerpts from our letter to the Food and Drug Administration and Dr. Dunbar's reply follow:

A. Ph. A.'s Contention

To Dr. Dunbar

. . . Both by law and by usage a physician's prescription has become a binding contract upon the pharmacist. The prescription is an order to the pharmacist to furnish certain drugs or combinations of drugs and to furnish them in the manner prescribed by the physician and in no other manner. Some states have laws defining the term prescription and laying down the requirements with respect to their compounding and dispensing. In such states it is definitely stated that the prescription, as written by the physician, must be compounded and dispensed and labeled in accordance with the directions of the prescriber.

For example, the California law states, "No person shall furnish any dangerous drug upon prescription except in a container correctly labeled with the date, the name and address and prescription number of furnisher, the names of the prescriber and of the person for whom prescribed, and the directions for use given by the prescriber." The New Jersey law

states, "The registered pharmacist compounding, dispensing, filling or selling a prescription shall place the original written prescription in a file kept for that purpose and affix to the container in which the prescription is dispensed a label bearing the name and address of the pharmacist, the date on which the prescription was compounded, and an identifying number under which the prescription is recorded in his files, together with the name of the physician, dentist, veterinarian or other medical practitioner prescribing it and the directions for the use of the prescription by the patient as directed on the prescription of the physician, dentist, veterinarian or other medical practitioner licensed to write prescriptions."

Both the written and unwritten law with respect to the compounding of prescriptions assumes that the pharmacist acts under the direction of the physician. He compounds or dispenses the medicine according to the art of pharmacy, but he labels the prescription only as directed by the physician. Presumably, if the physician is prescribing a dangerous or toxic drug, he does this with full knowledge of the danger involved, and he gives his patient such private directions as he may deem necessary and instructs the pharmacist what to put on the label of the prescription for the patient to read.

It would be a violation of all of the ethical concepts upon which the professional relations between the physician, pharmacist and patient rest to expect or require the pharmacist to add to the directions given the patient by the physician. It would be quite proper for a physician to question the authority of any pharmacist to reveal the contents of any prescription or to add to the directions already given by the physician, especially when such revelation or addition to the label would have the effect of raising a question in the mind of the patient as to the possible consequences resulting from medication ordered by the doctor.

Even if a critical emergency were created by the release of a new drug of highly toxic properties which would justify setting aside established procedure in the labeling of prescriptions for such drugs, it would seem that the physician should be the one to be directed to include the warning statement in the directions given on his prescription, so that the pharmacist will, in turn, place the warning statement on the label as a matter of compliance with the directions of the doctor who has decided what is best for his patient, and not on his own initiative. Furthermore, it can hardly be said that so stringent a procedure and so great a departure from custom is necessary under any circumstances in the case of drugs which are prescribed routinely, even though warnings appear upon their labels when sold without medical advice.

I believe that I speak for the overwhelming majority of pharmacists of the United States when I say that there is no reasonable requirement which they will not meet cheerfully and in a spirit of utmost cooperation for the protection of the public health. We do not believe that it can be shown that the

medical profession is so lacking in its appreciation of the dangers involved in the use of toxic drugs as to require setting aside the written and unwritten law with respect to labeling prescriptions in order to protect the patient.

Furthermore, pharmacists who are being informed by manufacturers of such drugs and by their professional organizations that physicians should be reminded of the dangerous nature of these drugs will be glad to remind the doctor and suggest the labeling considered necessary in the interest of public health and safety. They should not be compelled, however, to violate the written directions of the physician, and there should certainly be no blanket requirement to label prescriptions in the manner of a drug sold for self-medication.

I sincerely hope that it will be possible for the Food and Drug Administration to reconsider this question in the light of the foregoing comment, so that the professional relationship between physicians and pharmacists will not be disrupted. We are ready, of course, to confer with you on the subject at your convenience.

Respectfully yours,
(s) ROBERT P. FISCHELIS
Secretary

FDA's Reply

DEAR DR. FISCHELIS:

Your letter of April 12, 1946, discusses TC 6-A, "Drugs dispensed upon prescriptions not exempt from warnings requirement," issued on February 14, 1946. Inquiries and comments which you have received from your members raise the question in your mind as to whether or not the implications of this informal announcement forecast fundamental changes in the relationship between pharmacists and physicians.

We are fully conscious and appreciative of the fact that we have had the cooperation of your ASSOCIATION and that you have been helpful in advising pharmacists to follow the provisions of the law and regulations as well as the informal opinions expressed in our "TC" letters.

We do not believe that the concern which has been manifested by your correspondents as a result of the issuance of this TC is warranted. It is a fact, however, that recent developments in the accelerated research programs which have given great impetus to chemotherapy may quite logically be expected to bring about certain changes in the distribution of drugs if the public is to achieve the maximum benefit from these valuable agents and at the same time be protected as adequately as possible against harm which they are capable of producing. [Note further comment on this point below.—Ed.]

In your letter you express the view that the physician should be the one to be directed to include the warning on his prescription. The statute does not confer authority for this requirement.

As you know, section 502(f) (2) of the Federal Food, Drug and Cosmetic Act defines a drug as misbranded unless its label bears "such adequate warnings against use in those pathological conditions or by children where its use may be dangerous to health, or against unsafe dosage or methods or duration of administration or application, in such manner and form, as are necessary for the protection of users." This does not mean as some of your correspondents seem to believe that all warning notices that the manufacturer may elect to place on commercial packages of drug items must be copied on the prescription labels of drugs dispensed by pharmacists on physicians' prescriptions.

Certainly, those warnings directed to the physician rather than to the patient need not be transferred. Only such warnings as are necessary for the protection of patients who are under the physician's care need be transferred from the manufacturer's labeling to that of the package dispensed upon prescription.

The particular drug with which TC 6-A deals is thiouracil. It is in our opinion an outstanding example of those relatively few drugs where a warning on the prescription labeling is essential to the "protection of users." Thiouracil when used properly is of great value in the preoperative preparation of patients with hyperthyroidism. Its value, if properly used, exceeds its dangers.

The drug in a substantial percentage of the individuals to whom it is administered, however, causes granulocytopenia. A patient taking the drug who develops the symptoms of infection referred to in TC 6-A may be dead within a very short time if he does not receive heroic treatment from his physician. Those persons who develop granulocytopenia and are given the appropriate treatment promptly are practically certain to recover.

The views which we have expressed concerning the need for the warning on the prescription labeling of this drug were concurred in by a large group of national medical authorities who are experienced in its use and in our judgment the appearance of the warning is required not only as a matter of law but actually as a life-saving measure.

Very truly yours,

(s) P. B. DUNBAR

Commissioner of Food and Drugs

Subsequently, Dr. Dunbar wrote as follows with reference to the statement in his letter suggesting that changes in methods of distributing new chemotherapeutic agents may be imminent:

"I have been told that a statement made in my letter of April 25 to you has caused considerable concern to representatives of the drug manufacturing and distributing industries. That statement was that the great impetus recently given to chemotherapy may quite logically be expected to bring about certain changes in the distribution of drugs if the public is to reap the benefits of these new

agents and at the same time be adequately protected against harm.

My letter was in response to yours of April 1 in which you stressed the idea that the interpretation of the law expressed in TC 6-A introduces a new development into the relationship between pharmacist, physician and patient. The statement in my letter was directed solely to that proposition. We did not mean to imply any expectation that the multiplication of chemotherapeutic agents will bring about changes in the channels of distribution through which drug products are made available to ultimate consumers.

Very truly yours,

(s) P. B. DUNBAR

Commissioner of Food and Drugs



ACETYLATION OF ANTIGENS MAY LOWER VACCINE REACTIONS

Less severe reactions following injection of vaccines used against typhoid and other gram-negative organisms may result from a new process for detoxifying antigens.

At present the only solution to the problem of reactions is to reduce the amount of each antigenic component in a vaccine until the toxicity is within tolerable limits. This practice usually involves the disadvantage of requiring a series of injections to achieve a high level of protection.

Heretofore, in attempts to detoxify either the whole organisms or selected antigenic fractions, a loss of toxicity has almost invariably been accompanied by a corresponding loss of antigenicity.

At the Yale University School of Medicine, Dr. Henry P. Treffers and his associates studied the development of a practical vaccine against *Shigella dysenteriae* by employing acetylation of the soluble antigens as the detoxifying process. By this method the toxicity of many of the fractions in mice was at least 60 times less than that of the original material. Moreover, it appeared that the protection afforded by the vaccine increased with acetylation.

Similar results were obtained in detoxifying the soluble antigen of *E. typhosa*. The protective power of the acetylated antigen against active infection with typhoid organisms is now under investigation.

—*Science*, 103: 387 (Mar. 29), 1946

PLAN Rx SERVICE FOR VETERANS

AS this issue of the JOURNAL is about to go to press the Veterans' Administration has announced approval of a far reaching plan through which eligible war veterans, receiving treatment by private physicians, may obtain prescription service and emergency medical supplies at their neighborhood pharmacy. The plan evolved for the Veterans' Administration by W. Paul Briggs, director of pharmacy service, in consultation with Secretary Robert P. Fischelis of the AMERICAN PHARMACEUTICAL ASSOCIATION and George Frates, Washington representative of the National Association of Retail Druggists, includes a procedure which requires the cooperation of state pharmaceutical associations and is ready for immediate action.

Briefly stated, the plan involves an agreement between the state pharmaceutical association and the Veterans' Administration through which pharmacies owned, managed or operated by pharmacist-members of the state association supply prescriptions and medical requisites to patients eligible for medical service from the Veterans' Administration.

The physician will write the prescription on his regular printed blank bearing the date, name and address of the patient, and signature of the prescribing physician over the statement that he is authorized to treat and prescribe for the patient. This authorization may be under the provisions of a Veterans' Administration contract with the state medical society of which the physician is a member, or under his direct agreement with the Veterans' Administration if there is no state medical society contract.

Medical requisites will be supplied only on the original written prescription of the physician bearing the same information and authorization statement as is required on prescriptions for medicines.

The pharmacist will file a copy of the prescription and send the original to the state pharmaceutical association office for payment. In the case of narcotic prescriptions the original is retained on file and a duplicate is sent to the state association office.

Each prescription must bear a statement from the veteran for whom the prescription was written acknowledging its receipt.

The charge for the prescription will in each case be according to a schedule furnished as a part of the agreement.

Charges for medical requisites will be the

established fair-trade minimum retail price, if in effect. Should fair trade not be in effect, the allowable charge will be the prevailing retail price charged to other persons who are not beneficiaries of medical service under the Veterans' Administration.

State pharmaceutical associations will bill the Veterans' Administration monthly for the total of pharmacy services rendered and in turn will make payments to the individual pharmacies. The state pharmaceutical association will assume responsibility through a committee for the accuracy of the charges.

Each participating pharmacy will sign an agreement with the state pharmaceutical association assuring compliance with the provisions of the agreement. The agreement between the state association and the Veterans' Administration is for a period of one year and is renewable annually.

As these agreements with the Veterans' Administration are signed by the proper authorities of state pharmaceutical associations, the plan becomes effective, and it is anticipated that secretaries of state pharmaceutical associations will contact their members giving detailed information as soon as their associations have entered into the agreement.

It is felt that this agreement will go far toward supplying necessary prescription service and medical requisites to veterans at reasonable prices to the government and with adequate protection of the interests of the veteran and the pharmacist.

In offering to contract for pharmaceutical services through the state pharmaceutical associations the Veterans' Administration has taken advantage of the cooperation proffered to Gen. Bradley last November through a resolution passed by the Council of the A. P. H. A. and the Executive Committee of N. A. R. D. in joint assembly.

Commander Briggs who was recently appointed director of pharmacy services of the Veterans' Administration is being commended for speedy and effective handling of this important problem. Representatives of organized pharmacy, who were consulted in the evolution of the plan, indicate that they expect full cooperation on the part of state pharmaceutical associations in implementing and carrying out the procedure set forth in the proposed agreement.

VARIABLE CONTENT OF PENICILLIN

—WITH SUGGESTIONS REGARDING SYPHILIS THERAPY

CONDENSED FROM A JOINT STATEMENT BY THE

U. S. PUBLIC HEALTH SERVICE, FOOD AND DRUG ADMINISTRATION AND COMMITTEE ON MEDICAL RESEARCH*

CHEMICAL information concerning penicillin has been withheld during the war. The first published statement dealing with the chemical constitution of the drug appeared as a joint communication from the British Medical Research Council and the American Committee on Medical Research in December 1945. This statement provided information as to the existence of four different types of penicillin, designated in the United States as G, X, F and K. It was indicated that these were identifiable chemical compounds, distinguished from each other in the side groups attached to a common nuclear structure.

Even before the appearance of this report, information had become available (by personal communication from various sources) that the penicillins of different manufacturers might differ in their relative proportions of fractions G, X, F, and K; that the product of the same manufacturer might differ in this respect from time to time; and that a considerable change in the relative proportions of these species present in commercial penicillin had actually occurred, probably as a gradual phenomenon during 1944.

Prior to this time, commercial penicillin was apparently predominantly penicillin G, or a mixture of G and F. Subsequently, the G content in the product of some, if not all, manufacturers decreased markedly, with a relative increase in fractions F and K, especially the latter. It is probable that penicillin X has been present only in small proportions, if at all, in most commercial penicillins at any time during the past three years; though some manufacturers apparently concentrated on attempting to attain 40% or more X and marketed their products as such.

These changes in the relative content of penicillin species have occurred because of the use in commercial production of various strains of *P. notatum* or *P. chrysogenum*, and because of different techniques observed in the growth of the mold and in the purification of the final product.

In addition to the change in the relative content of penicillin fractions, there has also been a considerable change in the character of penicillin in the direction of increasing purity. The manu-

facturing producers have devoted great attention to the production of penicillin of increasing purity in units per milligram,[†] with a corresponding decrease in the amount of impurities present. The penicillin originally available and employed in the nation-wide syphilis study, presently to be mentioned, had an approximate potency of 200 u./mg., which has gradually increased to the present level of 900–1400 u./mg.

Meanwhile, Dunham and Rake had produced some evidence to indicate that commercial penicillin as available about two years ago, contained impurities which might themselves possess treponemocidal properties. Their work suggested that the less pure the penicillin, in terms of units per milligram, the more effective it was in the prophylaxis of syphilis *in vivo*. Lewis had likewise shown that impure penicillin exercised an inhibitory effect on the growth of sarcoma cells in tissue culture, while no such effect was demonstrable with more highly purified products. Clowes has observed a similar inhibition of development of sea-urchin eggs or their actual destruction, after exposure to a solution of "impurities" derived from commercial penicillin; whereas crystalline penicillins had no such effect. These studies—suggesting but far from proving that impurities remaining in commercial penicillin (after removal thereof of all penicillin activity) may be therapeutically effective—haven't yet been verified, nor for the moment further pursued.

Information has also begun to appear indicating that the several molecular species of penicillin vary significantly and unpredictably in their *in vitro* activity against a variety of bacteria; and it is at least suggested that in certain infections, *in vitro* activity may not be an adequate measure of *in vivo* activity.

It is worth while pointing out that potency of penicillin is spoken of in terms of its *in vitro* activity against a special test strain of *Staphylococcus aureus*; that absorption and excretion studies are carried out by means of biologic assay against a variety of organisms, usually *Staphylococcus aureus* or *Streptococcus pyogenes*;

* Original report published in the *Journal of the American Medical Association*, 131: 271, 1946.

[†] Subsequently here expressed as u./mg. Likewise, units per kilogram of body weight is expressed as u./kg.

and that up to this point these two bits of information have been related to the possible activity of penicillin against other pathogenic organisms, e.g., *Treponema pallidum*. This is certainly a *non sequitur*.

Syphilis Studies

On February 6-7, 1946, there was held in Washington, under the joint auspices of the National Research Council and the United States Public Health Service, a conference of investigators who have been engaged in a study of the effect of penicillin in syphilis. Presented at that conference, among other reports, were the results of two years' study of the effect of various treatment schedules in early acquired syphilis in man.

The relative activity in experimental syphilis in rabbits of penicillins G, F, X, and K has been under organized investigation in several different laboratories under the direction of a subcommittee composed of Eagle (chairman), Chesney, Mahoney, and Rake. These studies, utilizing pure crystalline G and X, and impure preparations of F and K (active material in each stated to consist of at least 90% of F or K, respectively) have been inaugurated at varying times within the past six months, depending on the availability of the products. Each investigator has treated rabbits infected with the Nichols strain of *T. pallidum*, treatment carried out six weeks after inoculation by a standard schedule, comprising a total of 24 intramuscular injections given at four hour intervals over a four day period. Each fraction has been tested within the dosage range 500-16,000 u./kg.

Within a week after the February 6-7 Penicillin Conference referred to above, disturbing information became available as a personal communication from Chesney, confirmed within a day or two by a similar personal communication from Mahoney and Arnold. Each of these investigators has studied peni-

cillin K by the method outlined above. Each of them reported that in their laboratories, clinical relapses had begun to appear within two to three months of treatment in a significant number of rabbits treated at all dosage levels, including the largest dose employed, namely, 16,000 u./kg.

Meanwhile, information had been provided from the laboratories of Eagle, Fleming, and Mahoney and Arnold to indicate that the CD 50* of commercial penicillin in experimental rabbit syphilis, employed by an almost identical treatment system as was used with the purified penicillin species, was on the order of 1500-2000 u./kg. Fleming, who had been assigned the study of penicillin G, likewise reported by personal communication that the CD 50 and CD 95 of G closely approximated that of commercial penicillin manufactured about two years ago.

It was apparent therefore that there was at least a tenfold difference between the *in vivo* activity of penicillin G and penicillin K; and that the latter drug was at least relatively ineffective in rabbit syphilis.

Within another few days, Shaffer of Detroit pointed out that in his hands, in early syphilis in man, a treatment schedule involving the administration of 2.4 million units of commercial penicillin in fifteen days (patients treated after December, 1944) was less efficacious than 1.2 million units given in 3 $\frac{3}{4}$ or 7 $\frac{1}{2}$ days (most of the patients treated prior to December, 1944). In each of these three schedules employed by Shaffer, sodium penicillin was given intramuscularly in aqueous or saline solution every three hours day and night for the total time period specified.

These two bits of information prompted an immediate examination of the results obtained with 2.4 million units of commercial penicillin in fifteen days in the Johns Hopkins Hospital. The results in 64 patients with early syphilis by this schedule, during the time period November, 1944-July, 1945, were compared with those in 106 patients chosen at random from the



* CD 50 and CD 95 = the dose required to cure 50 and 95%, respectively, of the animals treated.

HERE ARE THE FACTS ABOUT THE CHANGING CHARACTER OF COMMERCIAL PENICILLIN TO WHICH ERRATIC CLINICAL RESULTS ARE ATTRIBUTED . . . DIFFERENT FORMS OF DRUG DIFFER IN THEIR ACTIVITY, WITH PENICILLIN K REPORTED AS RELATIVELY INEFFECTIVE . . . IMPURITIES MAY HAVE HAD THERAPEUTIC VALUE . . . MANUFACTURING LABORATORIES AND OTHERS JOIN IN INTENSIVE EFFORT TO SOLVE PROBLEMS

nation-wide material, who were treated with 1.2 million units in 7½ days between June, 1943–March, 1944.

Although the schedule of 2.4 million units given in 15 days was favored because it had been in use for a shorter period of time than the schedule of 1.2 million units given in 7½ days, the results were distinctly poorer with the former, both in terms of relapse and of sero-resistance.

The composite curves of serologic response of the two series indicated that in this respect also, 2.4 million units in fifteen days gave less satisfactory results than half the dose in half the time.

Further to check this chemotherapeutic paradox, the Central Statistical Unit in the Johns Hopkins School of Hygiene and Public Health has determined on a nation-wide basis and on a much larger scale the cumulated relapse rate and the cumulated rate of attained seronegativity in a large group of patients with early syphilis (1280) treated with an identical schedule, 1.2 million units of commercial penicillin in 7½ days, over three time periods: (a) from June, 1943–May, 1944, (b) from May, 1944–October, 1944, and (c) from November, 1944–February, 1946. In patients treated prior to May, 1944, the relapse rate is significantly lower, and the proportion of patients becoming seronegative is significantly higher, than in patients treated since that date.

Suggested Possibilities

The less satisfactory clinical results obtained in early syphilis since May, 1944, suggested several considerations:

1. There has been a sudden change in the biology of syphilitic infection. This possibility seems fantastically improbable.

2. There has developed a strain of *T. pallidum* resistant to penicillin. This also seems improbable, since penicillin resistance, in the same sense as arsenic-bismuth resistance, has not been convincingly demonstrated anywhere in the co-operating clinics scattered over the entire United States.

3. There has been a change in the character of commercial penicillin. The last of these possibilities is known actually to have occurred. The change has been, as indicated above, in two directions:

- (a) A change in relative quantities of penicillin species with a probable substantial decrease in the amount of penicillin G and an equal compensatory increase in the amounts of penicillins F and K, especially the latter, present in commercial penicillin.

- (b) The increasing purity of penicillin in terms of u./mg. and a corresponding decrease of possibly therapeutically active impurities.

Pharmacology of Various Penicillins

The demonstration by Chesney and Maho and Arnold of the inefficacy of penicillin K experimental syphilis in rabbits has prompted further immediate studies of the pharmacologic behavior of various penicillins in the body. The results of a number of such studies have now come available (from Eagle and Musselman, Dermott and his co-workers, and Coghill and associates). These studies agree in indicating that penicillin K provides much lower and much less well-sustained blood levels than penicillins F, or X. They also indicate that on the basis of the amount of penicillin recoverable in the urine, penicillin K, in contrast to the other three penicillins, is largely destroyed in the body. Further conformity with these observations, Eagle and Musselman have shown that penicillin K is only 1/16 as efficacious in pneumococcal and streptococcal infections in mice as penicillins G, F, or X; and Hobby, using a different preparation and a different method of administration, has found K to be half as active as G in treatment of streptococcal infections in mice.

The conclusion seems inescapable that certain commercial penicillins produced within recent months are less efficacious in the treatment of syphilis than were the preparations available two years ago. It is probable that some of the increased therapeutic effect is due to the increased amount of penicillin K which has been present in the commercial preparations of many manufacturers. The existence of other factors, such as the decrease in the amount of possibly therapeutically active impurities, must also be reckoned with. These several factors are under further intensive study in a number of cooperating institutions. The penicillin manufacturers are likewise aware of the situation, are cooperating in the study, and are taking practical steps in production to correct the identifiable difficulties.

Suggestions on Penicillin Use in Syphilis

In the meanwhile and on the basis of the information provided as to the effect of penicillin in early syphilis in this and the preceding communication, it is not as yet possible to outline the best method of use of penicillin in the treatment of early syphilis or of any other stage of the infection. It is, however, possible to advance certain minimum suggestions for treatment on the basis of information presently available in the literature and shortly to be published, and to indicate a number of points to be avoided.*

* The suggestions given below as to early and latent syphilis recapitulate recommendations made on April 16, 1946, to the Armed Forces—on request of The Surgeon General, United States Army and Navy, respectively—by the Syphilitic Study Section, National Institute of Health.

1. When sodium penicillin in aqueous solution is used for the treatment of syphilis in man, injections should be given by the intramuscular route every two to four hours, preferably every two or three hours, day and night around the clock, for a minimum of $7\frac{1}{2}$ to 8 days. The presence of penicillin K in commercial penicillin, probably in varying and unpredictable amounts for the next few months, should be compensated for by an increase in individual and total dosage, and if possible by a decrease in the interval between individual injections from three to two hours.

The minimum dose of presently available commercial penicillin should be, for seronegative primary syphilis, not less than 3.6 million units (90 injections of 40,000 units each given every two hours; or 60 injections of 60,000 units each, given every three hours); for seropositive primary and early secondary syphilis, not less than 5.4 million units (90 injections of 60,000 units each, or 60 injections of 90,000 units each).

For a first relapse (including reinfection, infectious or serologic relapse) of early syphilis after previous treatment of early syphilis, the above course should be repeated; *plus* 360 mg. mapharsen (or an analogue) given twice to three times weekly in 6 individual intravenous injections of 60 mg each; *plus*: 1200 mg. bismuth subsalicylate, given twice weekly in 6 individual intramuscular injections of 0.2 Gm. each (see paragraphs 5 and 6 below for a brief discussion of combined penicillin and metal therapy).

For a second relapse of early syphilis after previous penicillin treatment, the patient should be transferred from penicillin entirely and placed on metal chemotherapy with arsenic and bismuth, preferably by the twenty-six week schedule employed by the Army and Navy (40 intravenous injections of mapharsen or an analogue, 16 intramuscular injections of bismuth subsalicylate).

(Evidence concerning the penicillin treatment of failures after previous penicillin therapy is not as yet satisfactory. It is indicated that failure after previous failure is considerably more frequent than in patients never previously treated. This may, however, be due only to the factor of duration of disease rather than to the existence of penicillin-resistance of particular strains of organisms, or of failure of the patient's own immune process.)

In later stages of syphilitic infection in adults (i.e., latent and late syphilis), the minimum dose should be not less than 3.6 million units; and in certain grave late manifestations of the disease, e.g., general paresis, should perhaps be as much as 10 million units, given over a period of twelve to fifteen days.

The use of sodium penicillin in aqueous solution is a hospital and not an office procedure. Injections of a few hundred thousand units given within one or a few days in a doctor's office are to be avoided.

2. In the treatment of infants and in consideration of the gravity of infantile congenital syphilis, the minimum total dose should probably be greater than that advised for use in adults, and should range between a total of 100,000 to 400,000 u./kg. In older children the dosage should be adjusted on a unit for weight basis with a minimum dose of 60,000 u./kg. (corresponding to the minimum total of 3.6 million units in an adult).

3. Under no circumstances should penicillin in its presently available form be administered orally for the treatment of syphilis.

4. The only presently satisfactory method of delaying absorption of penicillin is the administration of calcium penicillin in peanut oil-beeswax. Detailed information is not yet available as to the effects of this preparation in large series of patients with early syphilis, or with any other stage of the disease. It is known, however, that a single intramuscular injection of 600,000 units will produce a therapeutically active blood level for from twenty to twenty-eight hours. If calcium penicillin in peanut oil-beeswax is used in any stage of syphilitic infection, the average daily dose for an adult should be 2 cc. (600,000 units) and the total duration of treatment from eight to fifteen days or longer, depending on the stage of the infection. For early syphilis, a minimum total dose of 4.8 to 6 million units of this preparation is advised.

Calcium penicillin in peanut oil-beeswax should not be administered by the subcutaneous route, since under these circumstances the incidence of sensitizing reactions, with giant urticaria and angioneurotic edema, is excessively high.

5. There is evidence, both from the experimental laboratory and the clinic, that the addition of arsenic (mapharsen or its analogues) in subcurative dosage to a penicillin treatment schedule enhances the therapeutic effect of each drug. A suggested total dose of an arsenoxide for this purpose is 300-360 mg., administered in divided intravenous injections of 40-60 mg. each, over a total time period of one to four weeks.

It is recognized that the administration of arsenic in this dosage introduces a risk of serious reactions or death, in inverse proportion to the time interval of its administration. If 300-360 mg. are given within seven to nine days, the expected mortality rate is approximately 1:3000 to 1:4000. If the same dosage is given over a total period of four weeks, this risk is reduced to about 1:30,000.

In view of this consideration, and of possible technical difficulties encountered in the administration of arsenic or in the mere prolongation of treatment necessitated thereby, opinion is divided as to the desirability of including this drug in a recommended penicillin treatment schedule. The majority opinion of a group of competent experts is that the results of penicillin alone, in the dosage and time recommended above, would be satisfactory in a sufficiently large proportion of patients with early syphilis treated for the first time to justify eliminating arsenic from the original course of treatment, reserving its use for relapsing cases.

6. There is both clinical and experimental evidence to indicate that an insoluble bismuth salt administered intramuscularly in an oil suspension, e.g., bismuth subsalicylate, produces a slowly absorbed bismuth depot which continually releases small amounts of therapeutically effective bismuth for a period of from three to six months. There is likewise evidence to indicate that bismuth added to arsenic materially improves the results of metal chemotherapy. If bismuth is added to a penicillin or penicillin-arsenic schedule for early syphilis, it may be anticipated that the incidence of infectious relapse within the first six to twelve months after treatment will be materially reduced. This is prob-

ably accomplished, for the first few months after treatment, by bismuth effect alone. Later relapse is perhaps prevented or minimized by the fact of development of the patient's own immunity. Whether or not bismuth is of value in effecting cure of the individual patient, it should nevertheless be of considerable aid in minimizing infectious relapse, and thereby reducing the risk of spread of infection.

If bismuth is employed, the individual dose should be 0.2 Gm. (expressed as the subsalicylate, not as bismuth metal). A total of 1000 mg (5 injections) given every other day for a total of nine days, is unlikely to produce stomatitis except in patients with extremely bad oral hygiene, or renal damage in patients with previously undamaged kidneys. If the total dose is larger than 1000 mg., injections should be given not oftener than twice weekly.

However, the opinion of a group of experts is also divided as to the desirability of including bismuth with the original course of penicillin in early syphilis. The majority believed, as for arsenic, that bismuth should be reserved for use in relapsing cases.

7. Commercial penicillin in the dosage and by the methods of administration suggested above may be advantageously combined with fever therapy by means of induced tertian malaria, in any form of neurosyphilis.

It should be emphasized that these suggestions for the use of penicillin in syphilis represent a combination of medical desirability and expediency. They are based on presently available information, are tentative only, and are subject to revision within the next few months as further information accumulates.

It is also most vigorously to be emphasized that in the adoption of penicillin therapy for syphilis, the eventual value of which will not be determined for several years to come, the physician has a particular responsibility for careful follow-up and frequently repeated post-treatment observation on all patients so treated.

Summary

1. Penicillin as commercially distributed is not a single substance, but a mixture of several. At least four different penicillins which differ chemically in the side chains attached to the basic nuclear structure, have been identified. These are known in the United States as penicillins, G, X, F, and K.

2. The relative content of these several penicillins in commercial penicillin may vary from time to time throughout the industry. In recent months, some commercial penicillins have contained a substantial proportion of penicillin K.

3. The several penicillins vary in their *in vitro* and *in vivo* activity against a variety of bacteria.

4. Penicillin K is relatively inefficacious against the several infections experimentally studied. Its inefficacy is apparently due to the

fact that unlike penicillins G, X, and F it is rapidly destroyed in the body.

5. Commercial penicillin has also undergone a change in the direction of increasing purity (in units per milligram) with a consequent decrease in "impurities" which may possibly possess therapeutic activity.

6. The changing character of commercial penicillin is reflected in the fact that the results of penicillin treatment of early syphilis have been less satisfactory since May, 1944, than prior to that date.

7. In view of these considerations, certain tentative suggestions are made for the use of penicillin in the treatment of syphilis in man.

8. The factors responsible for the apparent decrease in efficacy of commercial penicillin are under intensive study by the industry and in other laboratories; and practical steps to meet the difficulty are in progress by industrial producers.



INDIANA BOARD ACTS TO CURB POISON VIOLATIONS BY GROCERS

The Indiana Board of Pharmacy has initiated a drive to curb violations of the state law which prohibits the dispensing of drugs or chemicals that are poisonous or contain poison by grocers and general store keepers. Each violator is first given a warning that he must either employ a licensed pharmacist or discontinue stocking such products.

In April, press reports indicated that there had been 5 convictions within a three week period. The *Indianapolis Star* supported the Board editorially, stating that "the law was enacted for the public's protection. It should be enforced so long as need exists for prohibiting sales by other than qualified pharmacists."

FRANK L. MCCARTNEY, OF NORWICH, RETIRES

Frank L. McCartney, president of the Norwich Pharmacal Co., has announced his retirement from active business. As a life member he has been active in A. Ph. A. affairs for many years. He occupied an important position in the procurement of drug and medical supplies in World War I as a Major in the Office of the Surgeon General. Mr. McCartney was honored by his associates at a testimonial dinner in Norwich, N. Y., on April 9.

PRESENT STATUS OF DENTIFRICES

A REPORT AUTHORIZED BY THE
COUNCIL ON DENTAL THERAPEUTICS, AMERICAN DENTAL ASSOCIATION

PERTINENT AND REVEALING FACTS ABOUT THE MOST WIDELY KNOWN UNACCEPTED DENTIFRICES, WHICH APPEAR IN THIS AUTHORITATIVE STATEMENT, WILL BE OF PRIMARY INTEREST TO EVERY PHARMACIST

DENTIFRICES that have been accepted by the Council on Dental Therapeutics are of known composition and will clean the teeth effectively when properly used with a well-designed toothbrush. This is all that any safe dentifrice has been shown to do.

The most widely known brands of unaccepted dentifrices will be discussed in this article. If the composition of an unaccepted dentifrice has been kept secret or its composition is not known to be constant, little will be said about its ingredients. It is obviously impracticable to discuss the ingredients of a product when its composition is subject to change without notice.

Tooth powder usually consists essentially of abrasives such as calcium carbonate, calcium phosphate and calcium sulfate, and detergents, such as soap and sodium alkyl sulfate, together with saccharin or sugar, and flavoring.

Tooth pastes are similar in composition to tooth powders, except for the addition of water or alcohol and binding and stabilizing agents such as glycerin, propylene glycol and vegetable gums. Other ingredients may be added or ordinary ingredients may be present in excessive amounts in order to produce a misleading impression of therapeutic value. The addition of substances for therapeutic effect may cause irritation or allergic reaction in sensitive persons.^{1, 2} It is therefore generally safer to choose a dentifrice for which no therapeutic effect is claimed.

While there are strong objections to the composition of certain unaccepted dentifrices, the

most important objection to them from the professional point of view is their advertising. Dentifrice advertising is a principal source of dental information reaching the public effectively today. This means that the impressions of the public with regard to dentists and dentistry, as well as with regard to the relatively unimportant product that is advertised, are largely formed by dentifrice advertisements.

The Council continues to consider dentifrices for acceptance in order that the health of the public may be protected. It is obvious that the health of the public is in jeopardy if people do not know what to do when symptoms of dental disease appear. If they read or listen to advertising for unaccepted dentifrices, they will be very likely to try an unaccepted dentifrice when their gums begin to bleed or when persistently foul breath indicates that they are in need of professional care.

While the dentist is often mentioned in advertising for such dentifrices, he is usually introduced in such a manner as to make him an accessory to the sales effort for the product, and the prospective purchaser is often led to believe that the dentifrice will supplant the services of the dentist to

a significant degree. After all, if dentifrices will eliminate bad breath or prevent tooth decay or gingivitis, as well as clean the teeth, why should the ordinary mortal bother to see a dentist?

In order to protect the public against false impressions that may jeopardize dental health and to protect themselves and their profession against slanderous implications, all dentists should support the Council and the government agencies with which it cooperates in their campaign to clean up den-

tifrice advertising by insisting that their patients use only Council-accepted dentifrices.

[Pharmacists also have a public health opportunity and responsibility to help disseminate accurate information on proper dental care.]



Calox Tooth Powder

Calox Tooth Powder is stated to consist of materials commonly used in dentifrices, with added sodium perborate and calcium peroxide, neither of which has been shown to be harmless or desirable in a dentifrice designed for unsupervised daily use by the public.

The advertising for this product has included many misleading slogans and statements.

Calox Tooth Powder is not acceptable to the Council.³

Caroid Dental Powder

This dentifrice appears to be of conventional composition except that it was found to contain approximately 5 per cent of papain, a proteolytic enzyme obtained from the papaya plant. Caroid Dental Powder was declared unacceptable by the Council on Dental Therapeutics in 1941.⁴ A case of severe allergic reaction which was traced to exposure to Caroid Dental Powder was reported in 1945.² The allergic disturbance was attributed to papain. The author who reported the case of allergic sensitivity to Caroid Dental Powder cited several previously published articles on the allergenic properties of papain. So far as the Council is aware, papain has not been shown to contribute to the effectiveness of dentifrices or to be active as a cleansing agent under conditions which prevail in the mouth.

Colgate's Dentifrices

Colgate's dentifrices are Colgate Dental Cream, Colgate Tooth Powder and Cue, a liquid dentifrice.

Colgate Dental Cream was accepted by the Council in 1930, but was deleted in 1934 as a result of the firm's violation of the Council's rules governing advertising of accepted products.

In 1940, the firm stipulated with the Federal Trade Commission that it would cease advertising unqualifiedly that "most bad breath begins with the teeth" or that "a safe, sure way to correct bad breath is through regular use of the thorough, cleansing action provided only by the special ingredients in Colgate's Dental Cream."

On September 5, 1944, the Federal Trade Commission announced another stipulation involving several products of the Colgate-Palmolive-Peet Company, including Colgate Dental Cream and Colgate Tooth Powder. In the provisions with regard to its dentifrices, the firm agreed to discontinue the following representations, among others.

1. That the use of any of the respondent's dentifrices has any beneficial effect, except as a transitory mask, upon unpleasant breath odors other than those due to food particles or other matter in the mouth removable by the use of a toothbrush and the respondent's dentifrices.

2. That, in all cases, unpleasant breath odors due to the presence of decaying food particles in the mouth will be benefited by use of the respondent's dentifrices.

Colgate's dentifrice advertising has frequently employed pictures of men dressed in the office attire of dentists. Such abuse of the prestige of the dental profession is seriously misleading.

The records of the Council office indicate that Colgate's dentifrices are of conventional composition. The firm has not supplied acceptable evidence that would support claims for their superiority in any respect. The firm was asked for information concerning the compositions of its dentifrices, and replied as follows in a letter dated November 18, 1944:

"Replying to your letter of October 10 war restrictions and emergencies cause such changes in product formulation that anything we would send you might be out of date shortly after. Under the circumstances, we believe it best not to try to give you any formula information at this time." It seems that the firm would be well advised to discontinue claims that its dentifrices have special value when their composition is apparently so variable. Any evidence that the firm might have accumulated with regard to its product when made by one formula would not necessarily apply to the product when made by other formulas.

Cue is not acceptable to the Council, since evidence that it is an effective dentifrice has not been presented.⁵

Forhan's Tooth Paste

Forhan's Tooth Paste, which is not acceptable to the Council, has been advertised for years as useful in the treatment of pyorrhea or gingivitis. The notorious "four out of five" theme has been frequently employed in the advertising of this product. A careful analysis conducted by the Bureau of Chemistry of the American Dental Association in 1942 failed to reveal the presence of any ingredient that might be therapeutically significant. In fact, Forhan's Tooth Paste was found to be an ordinary soap-chalk-glycerin mixture with coloring and flavors added. The Federal Trade Commission issued a complaint against the product August 23, 1943.⁶

Iodent Tooth Pastes No. 1 and No. 2—Iodent Tooth Powder

The Iodent tooth pastes and Iodent Tooth Powder are dentifrices of conventional composition.

Iodent Tooth Paste No. 1 and Iodent Tooth Paste No. 2 were accepted in 1931. They were deleted in 1939 for failure to comply with Council requirements in regard to labels and advertising.⁷

Ipana Tooth Paste

Ipana Tooth Paste is not accepted by the Council. In 1942, the Council published a report in which the merchandising policies of the Bristol-Myers Company, distributors of Ipana Tooth Paste, were critically discussed.⁸ Ipana has been the subject of numerous unfavorable reports issued by the Council and by various government agencies. A discussion of recent findings with regard to this product appears in the March 1, 1945, issue of the *Journal of the American Dental Association* under the heading "Gingivitis Following the Use of Ipana Tooth Paste."¹¹

After the "gingivitis" incident occurred, the firm supplied the Council with the following qualitative statement of composition for Ipana Tooth Paste:

Sodium carbonate	Flavoring oils:
Calcium carbonate	Oil spearmint
Soap flakes	Cinnamic aldehyde
Sodium hydroxide	Oil cloves
Stearic acid	Salol
Saccharin—insoluble	Menthol—U. S. P.
Glycerin	Coloring:
	Citroline yellow

The firm also stated that it would keep the Council office informed of any change in the qualitative composition of the product.

A critical analysis of the advertising for the product may be found on page 1769 of the November 1, 1943, issue of the *Journal of the American Dental Association*. The basic advertising theme has not changed since then.

Kolynos Dentifrices

Neither Kolynos Dental Cream nor Kolynos Tooth Powder is accepted by the Council. The dental cream was accepted for a time, but it was deleted from *Accepted Dental Remedies* when the firm would no longer agree to obtain the approval of the Council for changes in the composition of its product.⁹

Listerine Dentifrices

Listerine Tooth Paste and Listerine Tooth Powder are not acceptable to the Council.

Recent advertising for Listerine Tooth Paste carries the theme "Try this 'Prescription for your Teeth.'" This is a misuse of the word "prescription." The advertising copy implies strongly that the dentifrice is useful in the prevention of tooth decay. The firm has not supplied evidence to support such claims, and the Council is not aware of any such evidence.¹⁰

Dr. Lyon's Tooth Powder

Dr. Lyon's Tooth Powder is of simple conventional composition. Experiments conducted in the Bureau of Chemistry of the American Dental Association indicate that it is relatively abrasive when tested in the laboratory.

In 1942, the Federal Trade Commission issued a cease and desist order requiring the vendors, the R. L. Watkins Company, to stop "disseminating advertisements containing the statement 'Do As Your Dentist Does . . . Use Powder,' or any other statement of like import. . . ."

The Commission found that the product was ". . . wholly without therapeutic properties. . . ."

The use of the prefix "Dr." in the title of the product may tend to create in the mind of the public the impression that the product is superior to other dentifrices that do not bear such a distinguishing mark. This practice is misleading and is discouraged by the Council. Dr. Lyon's Tooth Powder is not acceptable to the Council.¹¹

Pebeco Dentifrices

Pebeco dentifrices are not accepted by the Council. Pebeco Tooth Paste was accepted in 1931 on the conditions that advertising for the product would be revised and that the firm would undertake experiments looking toward the omission of potassium chlorate or reducing it in content. The product was deleted in 1933, when the firm reverted to an objectionable type of advertising.

Information received from the firm in 1946 indicates that its dentifrices are of conventional composition except for the presence of 10 per cent of potassium chlorate in the paste. In the opinion of the Council, potassium chlorate is not a desirable or a necessary dentifrice ingredient.¹²

Pepsodent Dentifrices

Pepsodent Tooth Paste, Pepsodent Tooth Powder and Pepsodent Liquid Dentifrice were ac-

cepted by the Council in 1939, but were deleted in 1941 when the firm would no longer agree to abide by the liberal rules of the Council on Dental Therapeutics with regard to advertising.

Exaggerated and misleading claims for Pepsodent Tooth Paste and Pepsodent Tooth Powder have characterized the firm's advertising for many years. The firm has attempted to endow "irium," the soap substitute used in its products, with extraordinary virtues that it does not possess. Claims for superior polishing power and claims for ability to remove "film" from the teeth are also misleading and are based on inadequate evidence.¹³

Phillips' Milk of Magnesia Dentifrices

Phillips' Milk of Magnesia dentifrices are not accepted by the Council. So far as the Council is aware, they are of conventional and unoriginal composition.

The radio advertising for these products constitutes an interesting subject for study by those who are concerned with the education (or mis-education) of the public by means of radio. Emphasis on such passages as "genuine" Phillips' Milk of Magnesia, "unpleasant" mouth acids, "acids . . . that foster dingy teeth" and "the taste-clean tooth paste" tend to mislead the listener, not only with regard to the character and the limitations of the dentifrices which are being advertised, but also with regard to basic principles in dental health and hygiene. So far as the Council is aware, Phillips' is no more "genuine" than other brands of milk of magnesia; the "mouth acids" which may contribute to the carious process do not produce any unpleasant taste in the mouth, nor do they "foster dingy teeth," and the taste in the mouth is not related to cleanliness. Furthermore, it is implied in the advertising that Phillips' dentifrices will help to prevent tooth decay. Currently available scientific evidence does not support such a claim.

"Remineralizing" Dentifrices

An unacceptable effervescent mixture commonly referred to as "Andresen's Formula" is currently available under a number of brand names. Perhaps the most prominent of these is Eff-Remin, an unaccepted product upon which the Council published an informative report in November, 1939.¹⁴

The Food and Drug Administration issued a notice of judgment against Eff-Remin in 1944.¹⁵

So far as the Council is aware, "Andresen's Formula" does not have therapeutic value.

Revelation Tooth Powder

Revelation Tooth Powder is not accepted by the Council. The firm has not revealed the composition of Revelation Tooth Powder, or provided assurance that the composition is uniform.

The advertising and label claims for this product have been brought more nearly into agreement with scientific evidence during recent years.

Squibb Dentifrices.

Squibb Dental Cream was accepted by the Council in 1931 and deleted in 1933 as a result of violation of the Council's rules with regard to advertising.

There is nothing unusual or superior about so-called "milk of magnesia" dentifrices. In fact, a large proportion of the dentifrices on the market today are of the milk of magnesia type. In many instances this fact is not even mentioned on the packages or in the advertising. There is no evidence that Squibb dentifrices have any therapeutic value whatever.¹⁶

Teel

Teel Liquid Dentifrice is not accepted by the Council. There is available evidence that it is inferior as a cleaning agent to many of the popular brands of pastes and powders, and its use permits tooth discoloration, which can be removed only by a substance having abrasive properties.

Current lay advertising for Teel advises the weekly use of baking soda in addition to Teel without explaining why. Baking soda is an excellent dentifrice, and its use would naturally aid in the removal of superficial stains that might have accumulated during the time when only Teel was used.

It has not, therefore, been demonstrated that Teel adequately performs the sole function of a dentifrice; namely, to aid the brush in cleaning the accessible surfaces of the teeth.¹⁷

Conclusions

The listing as given above is by no means complete. There are sixty-seven dentifrices listed in *Accepted Dental Remedies*, and nearly a thousand were on the market in the United States before the war.

An up-to-date statement of composition for any dentifrice that is accepted by the Council on Dental Therapeutics can be obtained by sending a letter or postal card to the secretary of the Council on Dental Therapeutics, 222 East Superior St., Chicago 11. Such statements of composition are also published, with much other concise information, in the Council's book, *Accepted Dental Remedies*, which is revised annually and may be purchased from the American Dental Association for \$1.50.

The Council's activities during the sixteen years of its existence have been partly responsible for improvement of most dentifrices from the standpoint of quality and, in many cases, for improvement in advertising as well. By its continued insistence on the elimination of unnecessarily abrasive substances from dentifrices, the Council has influenced even the manufacturers of unaccepted products to choose less harsh abrasive agents.

The efforts of the Council have also resulted in the partial elimination of ingredients for which misleading therapeutic claims have been made, or to which many persons are sensitive. Such substances as pumice, prepared chalk, betanaphthol, orris root, potassium chlorate and sodium perborate have been removed from many dentifrices. Of course, none of the accepted dentifrices contains such ingredients.

We no longer see such label statements, formerly common, as "Pepsin-Containing Tooth paste" (1929), "Special Film-Removing Tooth Paste" (1933), "Good for Tender Gums" (1934), "Preserves and Hardens the Gums" (1935), "Whitens the Teeth" (1935) and "Germicidal" (1939).

The reader of this article will remember many

misleading advertising statements that are no longer used, such as, "Whitens Teeth 3 Shades in 3 Days" (1930), "Quickly restores teeth to their natural gleaming whiteness by removing Bacterial-Mouth (you have it)" (1930), "Ziratosol is an important ingredient" (1934), "The only Toothpaste which Detoxifies" (1934) and "Do As Your Dentist Does,—Use Powder" (1940). Oddly enough, the dentifrice that was labeled "preserves and hardens the gums" was advertised to dentists with the following headline, "We never make extravagant claims." The labeling was not reproduced in the advertisement to dentists.

Council accepted dentifrices are obtainable throughout the country. A list of such dentifrices may be obtained by pharmacists or their patrons without charge by addressing a request to the secretary of the Council on Dental Therapeutics, 222 East Superior St., Chicago 11.

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- 2 Osgood, Howard Atopic Sensitivity to Caroid (Papain), Report of a Case, with Discussion of Some of the Properties and Uses of the Drug *J Allergy*, 16: 245, September 1945
- 3 *J Am Dent Assoc*, 22: 140, January, 1935, 27: 448 March, 1940
- 4 *J Am Dent Assoc*, 28: 639, April, 1941
- 5 *J Am Dent Assoc*, 25: 1854, November, 1938, 27: 1310 August, 1940, 29: 135, January, 1942, 31: 1516, April 1, 1944
- 6 *J Am Dent Assoc*, 30: 129, January 1, 1943; 30: 1954, December 1, 1943
- 7 *J Am Dent Assoc*, 26: 1194, July, 1939
- 8 *J Am Dent Assoc*, 29: 2244, December 1, 1942
- 9 *J Am Dent Assoc*, 31: 692, May 1, 1944
- 10 *J Am Dent Assoc*, 26: 1709, October, 1939
- 11 *J Am Dent Assoc*, 27: 1133, July, 1940, 29: 2246, December 1, 1942
- 12 *J Am Dent Assoc*, 20: 2248, December, 1933
- 13 *J Am Dent Assoc*, 28: 639, April, 1941
- 14 *J Am Dent Assoc*, 26: 1887, November, 1939
- 15 *J Am Dent Assoc*, 31: 116, January 1, 1944
- 16 *J Am Dent Assoc*, 20: 2248, December, 1933; 29: 869 May 1, 1942
- 17 *J Am Dent Assoc*, 28: 1682, October, 1941; 30: 1109, July 1, 1943.

AGRANULOCYTOSIS YIELDS TO PENICILLIN

Eleven cases of agranulocytosis treated with penicillin have been reported. Prompt recovery occurred in every case. In commenting on this notable improvement in treatment of this condition, Maj. Edward W. Boland and associates in the Medical Corps, A. U. S., state that "experiences to date indicate that penicillin constitutes the most potent remedy at hand for the prevention or control of the serious, potentially fatal complication of agranulocytosis."

They point out that patients with agranulocytosis do not die from suppression of their bone marrow but from the bacterial invasion which commonly develops in the absence of granulocytes. In a body robbed of its leukocytic de-

fenses an overwhelming sepsis may occur. Massive doses of penicillin control the bacterial invasion and allow for much greater optimism in prognosis than has heretofore been possible.

Some of the investigators who have treated cases of granulocytosis used leukopoietic agents in conjunction with penicillin, but the current trend is to rely on penicillin alone.

Successful treatment of one case included a transfusion, liver extract and a total dose of 560,000 units of penicillin in four days.

Improved treatment of agranulocytosis is particularly significant at present because of its incidence in the use of the new drug thiouracil. —*J. Am. Med. Assoc.*, 130: 556 (Mar. 2), 1946.

PHYSICIANS DISCUSS

IMPROVING USE OF DRUG THERAPY

MORE effective teaching of drug therapy is urged by Dr. Austin Smith, secretary of the A. M. A.'s Council on Pharmacy and Chemistry, in a paper which offers constructive criticism and specific suggestions to improve the physician's prescription writing.

There has been much discussion, Dr. Smith reports, since the former president of the American Medical Association, Dr. H. L. Kretschmer, pointed out deficiencies in the prescribing habits of many physicians. Comments from one well-known educator carry an implication that the pharmacist may be in a position to help improve the situation. The young medical practitioner dreads the writing of prescriptions, the educator stated, because he lacks confidence that he may express his desires correctly, because he is in doubt concerning the best combinations and mixtures, and because he fears criticism from those who might observe his errors. He urged that four groups teach prescription writing: pathologists, clinicians, pharmacists, and physicians who have graduated in pharmacy.

In answering the argument that there is less need to teach prescription writing and pharmacology since drug manufacturers now "provide little ampuls which can be broken for injection and tablets which can be given by mouth, all of them being accompanied by profusely descriptive literature," Dr. Smith said:

"...No manufacturer has yet been able to offer anything which will serve as a substitute for clinical judgment. The manufacturers have done much to advance our knowledge concerning the use of drugs. They have made funds available for research. They have conducted original research and they have sought better relations with those who are best qualified to evaluate clinically new drugs. However, it should never be forgotten that the medical school is the place to lay a foundation for a knowledge of drugs. . . ."

After commenting on various methods of improving the teaching of drug therapy in medical colleges, the secretary of the Council pointed out that a progressive attitude in formal education must be continued during the hospital training.

"So far as the use of drugs is concerned," said Dr. Smith, "the intern ought to be shown an example by the experienced men on the staff and should see only the best of drug therapy.

"He should not be forced to use hospital formularies which list remedies by number or other

equally obnoxious methods. Time after time opportunity has arisen to point out the necessity of insisting that hospital formularies contain only useful agents offered under fully descriptive names."

Because of the rapid advances in drug therapy, the study of rational drug therapy must also be pursued actively by the licensed practitioner. Some indication of the need for this continuation of education can be gained simply by examining items available in the average pharmacy, Dr. Smith observed.

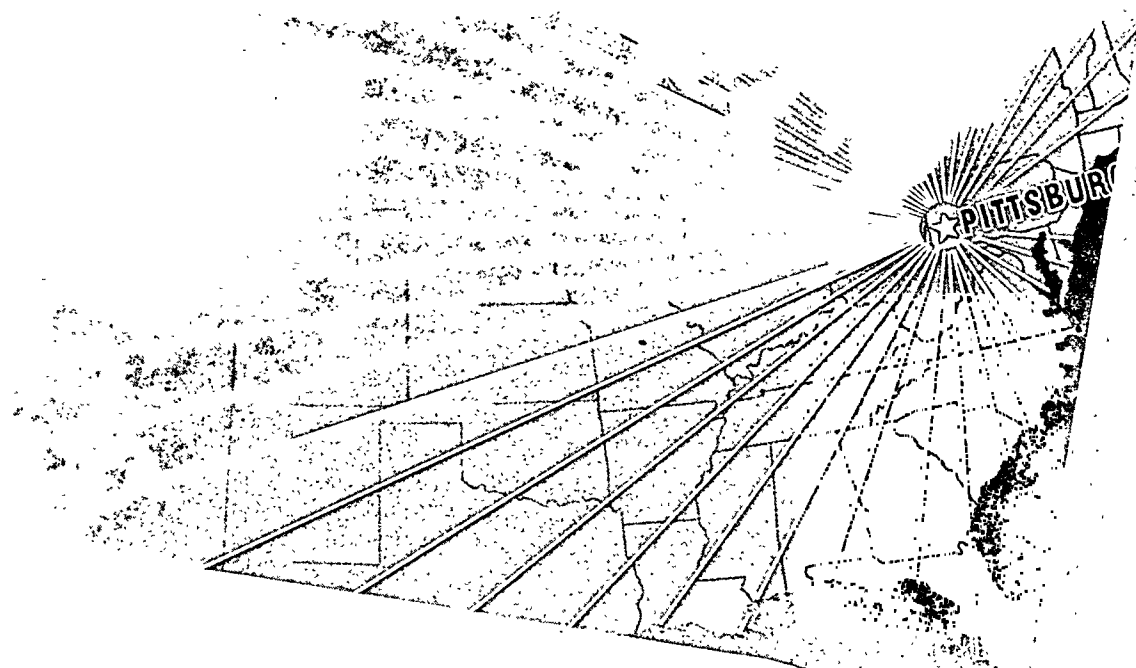
"The shelves of almost all drugstores contain packages of substances which have little or no therapeutic value. A colleague of mine, Dr. E. P. Jordan, inquired of a prescription pharmacist in a Chicago loop drugstore and learned that this 'dead stock' is an important item to be computed in the annual store report and that probably it would be considerably higher in the ordinary drugstore than in a pharmacy devoted to prescriptions.

"Inquiry then was made of a pharmacist in a suburban neighborhood and the inquirer learned that in this suburban store there was about \$3000 worth of dead stock which soon would have to be thrown away. Most of the items reached the store through a physician's prescription and from 70 to 80% of this material probably came from smaller and less well-known manufacturers. These preparations were ordered because a physician prescribed new or unusual drugs, ointments or the like but failed to use them more than once or twice.

"Obviously medical or direct mail advertising or the local activities of detail men were the factors largely responsible for the prescribers using these preparations before consulting such groups as the Council on Pharmacy and Chemistry or former teachers who are in a position to supply a scientific evaluation of claimed therapeutic merit.

"This situation results in criticism from the pharmacist, unnecessary financial expenditure by the consumer, financial loss by the druggist and frequent loss of patient confidence by the physician. It is no credit to the medical profession," physicians were told, "when pharmacists state that they can tell what detail man is calling on doctors in their neighborhood by the type of prescriptions that begin to flow into the pharmacy."

—*J. Am. Med. Assoc.*, 130: 559 (Mar. 2), 1946.



A CORDIAL WELCOME TO A. PH. A.

PHARMACISTS of the Keystone State extend a cordial invitation to the members and friends of the AMERICAN PHARMACEUTICAL ASSOCIATION and affiliated organizations to attend the annual meeting at the Hotel William Penn in Pittsburgh, August 25-30. Those of us in Pittsburgh join with pharmacists throughout the state in extending a sincere welcome to all.

Although Pittsburgh is renowned chiefly as the great steel city, the pharmacist will find many points of professional and cultural interest, as well as the best in entertainment, to make this a memorable place for one of your first postwar holidays.

Hotel facilities here are still crowded but you will have no difficulty if reservations are made now. In addition to the headquarters hotel, there are several other good hotels within walking distance of the meeting. The program being arranged promises to be one of importance to the profession and of practical value to every pharmacist.

The Local Committee and Pennsylvania pharmacists will warmly welcome your attendance at the 1946 meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION and affiliated organizations.

Stephen Wilson
LOCAL SECRETARY

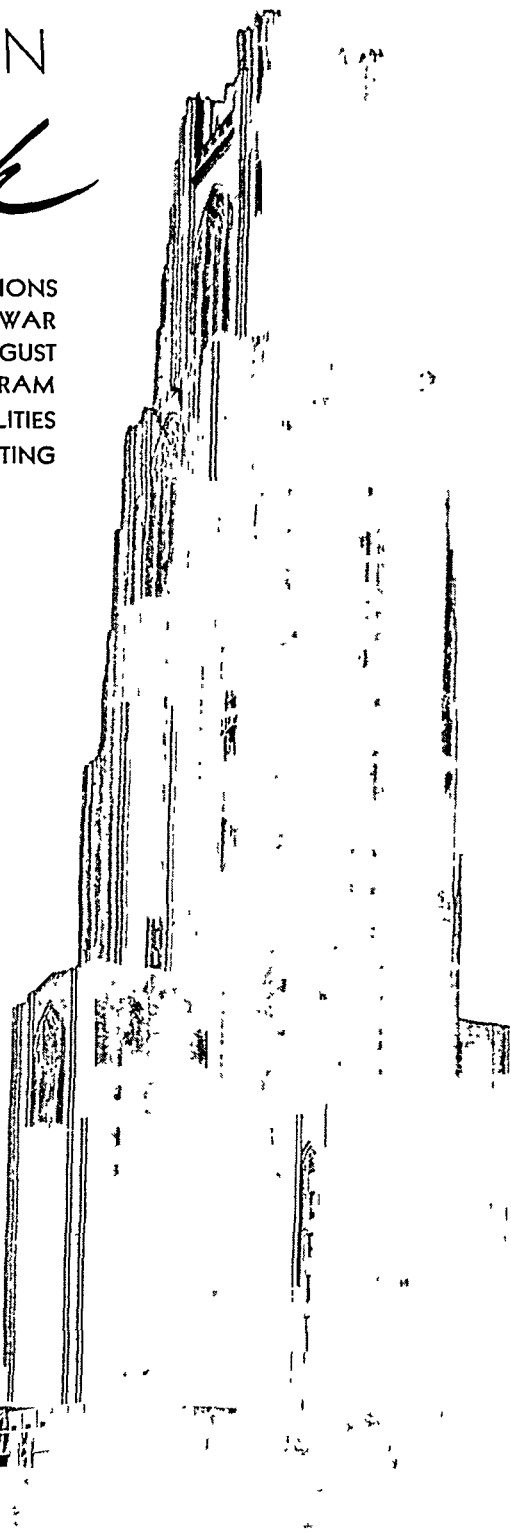
Hugh C. Muldoon
LOCAL COMMITTEE CHAIRMAN

A. PH. A. MEETING IN *Pittsburgh*

SEVEN RELATED ORGANIZATIONS
JOIN A. PH. A. IN FIRST POSTWAR
SESSIONS SCHEDULED FOR AUGUST
25 TO 30 . . . OUTSTANDING PROGRAM
AND ENTERTAINMENT FACILITIES
AWAIT PHARMACISTS AT MEETING

ONE of the most constructive, fast-moving programs in the history of the AMERICAN PHARMACEUTICAL ASSOCIATION is being arranged for the annual convention to be held in Pittsburgh, August 25 to 30. It has been two years since the A. PH. A. and its affiliated organizations met. During this period ASSOCIATION officials and committees worked diligently to carry forward the program and activities of organized professional pharmacy. There have been many significant developments affecting the practicing pharmacist which will be reported. There is an accumulation of important matters to be discussed and acted upon democratically, but decisively, so that the ASSOCIATION's staff can meet the needs of members through its expanding facilities.

In addition to the sessions of the AMERICAN PHARMACEUTICAL ASSOCIATION, August 27-30, there will be meetings of affiliated and related organizations for the more specialized interests of pharmacists. Tentative dates are:



American Association of Colleges of Pharmacy
(August 25-27)

American College of Apothecaries (August
28-30)

American Institute of the History of Phar-
macy (August 29-30)

American Society of Hospital Pharmacists
(August 28-30)

Conference of Pharmaceutical Association
Secretaries (August 26-27; 29-30)

National Association of Boards of Pharmacy
(August 26-27)

Plant Science Seminar

To avoid overlapping sessions of interest to various groups, there will be a joint meeting of the American College of Apothecaries and the American Society of Hospital Pharmacists; of the Section on Historical Pharmacy and the American Institute of the History of Pharmacy; and of the Section on Practical Pharmacy and the Scientific Section. The latter meeting, in all probability, will be joined by the American Society of Hospital Pharmacists and the American College of Apothecaries.

Organization officials expect these joint sessions to provide strengthened, more constructive programs than would otherwise be possible.

Because of the growing membership in the A. Ph. A., and the interest of this first postwar session to pharmacists in general, it is important that everyone planning to attend make reservations early if satisfactory accommodations are to be obtained.

At the Hotel William Penn, convention headquarters, a limited number of rooms has been set aside for convention goers. As the number of single rooms is extremely limited, it is suggested that pharmacists reserve double accommodations with a friend whenever possible. The deadline for reservations is August 1.

Rates at the Hotel William Penn are: single, \$3.85 to \$7.70; double, \$5.50 to \$8.80; twin beds, \$6.60 to \$11; three in a room, \$7.70 to \$11; suites for one or two, \$12 and up.

Hotels conveniently located near the convention hotel include:

The Pittsburger—single, \$3.30 to \$4.40; double, \$5 to \$6.50; twin beds, \$6 to \$6.50.

Hotel Roosevelt—single, \$3.30 to \$5; double, \$5.50 to \$7.50; twin beds, \$6 to \$7.50.

Hotel Henry—single, \$3 to \$3.50; double \$5; twin beds, \$5.50 to \$6.

Fort Pitt Hotel—single, \$1.75 to \$3.50; double \$3 to \$5; twin beds, \$6.

Some of the other hotels are the Hotel Webster Hall, Hotel Schenley and Keystone Hotel.

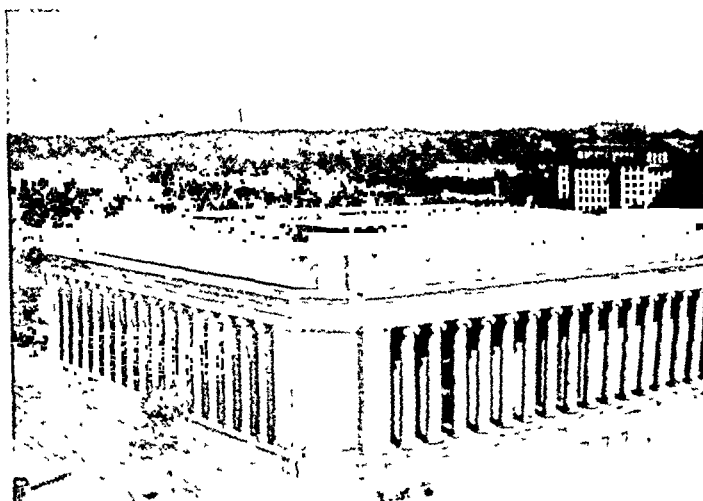
Abnormal housing and travel conditions still prevail in the Pittsburgh area as in most parts of the country. Since these facilities are overtaxed, pharmacists should not plan to stay in Pittsburgh over the Labor Day week end. Those who are not required to attend special post-convention meetings of executive groups should plan to check out Friday, August 30, before 6 p. m. if possible. Pharmacists who wish to visit some of the points of interest in or near Pittsburgh should take advantage of the opportunity early in the convention week or during the preceding days.

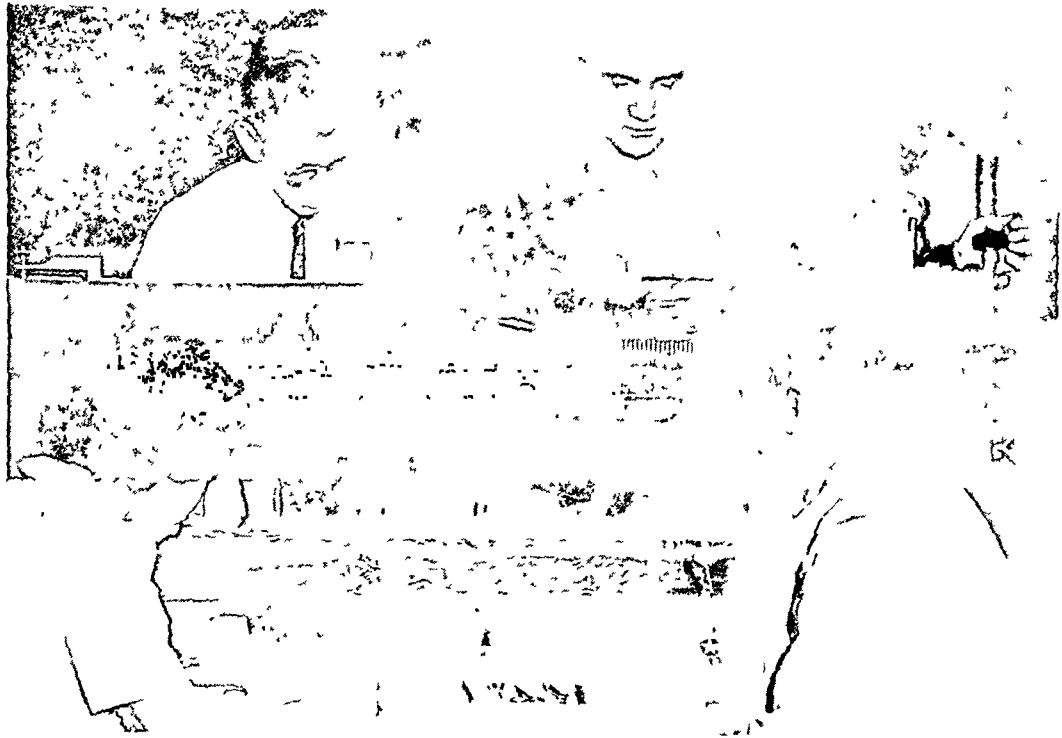
World renowned as a great industrial center, Pittsburgh offers many other features of interest to visiting pharmacists.

There are the great scientific and cultural institutions, such as the Allegheny Observatory, million dollar Buhl Planetarium and Institute of Popular Science; Mellon Institute of Industrial Research; the historical Block House (all that remains of the original Fort Pitt) which stands

University of Pittsburgh's
unique Cathedral of Learning,
tallest educational building
in the world.

Mellon Institute of Industrial
Research conducts many
pharmaceutical investigations.
A. Ph. A.'s Council
chairman, Dr. George D.
Beal, serves as assistant
director.





Pittsburgh boasts two fine pharmacy colleges: one at Duquesne University, the other (above) at the University of Pittsburgh.

near the apex of Pittsburgh's Golden Triangle; and the Carnegie Institute.

Of especial interest to pharmacists is the great scientific organization, the Mellon Institute of Industrial Research, where A. Ph. A.'s Council chairman, Dr. George D. Beal, serves as assistant director. The beautiful building, endowed by Andrew and Richard Mellon, houses research activities in more than 60 fields.

Embedded in the floor of the lobby, the visitor will note 13 medallions signifying the Institute's recognition of and collaboration with leading American scientific and professional societies and their realms of scientific research. Among these, in the aisle space separated from the main lobby on the right by columns, pharmacists will observe the medallion of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Pharmaceutical research at the Mellon Institute is very broad and of high value to pharmacy, medicine and the public. Many new drugs, other sickroom supplies and toilet preparations have been evolved. During the past year, investigators at the Institute published a series of papers on drug standardization under the auspices of the U. S. Pharmacopoeia Convention. There has also been extensive work recently on the synthesis of new antimalarial drugs and in the field of diabetes.

At Pittsburgh's Stephen C. Foster Memorial and Shrine, costliest tribute ever erected to a musician, will be found the famous *Fosteriana* collection of Josiah K. Lilly. Mr. Lilly, a Remington Medalist and former honorary president of the AMERICAN PHARMACEUTICAL ASSOCIATION, assembled this unique collection over a period of

This is industrial Pittsburgh.



about seven years, following his retirement as president of Eli Lilly and Company. At the dedication of the Stephen Foster Memorial in Pittsburgh, site of the composer's birthplace, Mr. Lilly presented his collection for preservation in perpetuity.

The Buhl Planetarium, at Ohio and Federal Streets, North Side, represents the most modern and complete approach to the popular interpretation of science in everyday life. Heart of this newest Pittsburgh civic institution is the circular sky theater, presenting a drama in which the whole universe is the stage and the stars and planets are the actors. In addition to the sky theater there are five spacious halls for the Institute of Popular Science exhibits, which move and—by means of an automatic record-playing system—explain themselves to visitors.

Pittsburgh boasts two fine pharmacy colleges, one at Duquesne University and the other at the University of Pittsburgh. Another point of unusual interest at the University of Pittsburgh is the 42-story Cathedral of Learning, world's tallest educational building.

Nearby is the Carnegie Institute, a group of buildings which includes the Carnegie Library, Music Hall, Museum, Art Galleries and the Hall of Architecture. All of the Carnegie buildings are open to the public without charge.

The Allegheny Observatory, located in River

view Park, was made famous by the work of its director, Samuel P. Langley, who from 1867 to 1887 carried on his epoch-making observations of the sun. His invention of the bolometer allowed him to investigate the heat spectrum far beyond the infra-red. Here also he made his experiments in aerodynamics which led ultimately to the invention of the airplane.

Of particular interest to hospital pharmacists are Pittsburgh's many institutions, including Western Pennsylvania Hospital, St. Francis Hospital, Mercy Hospital, Montefiore Hospital, Allegheny General Hospital and Pittsburgh Municipal Hospital. Pharmacists will especially want to visit the Falk Clinic. The Clinic, which includes a well developed pharmaceutical service, serves as the out-patient department for the University of Pittsburgh medical center and its affiliated hospitals.

For those with botanical interests the Phipps

Star projector in the circular sky theater of Pittsburgh's Buhl Planetarium.



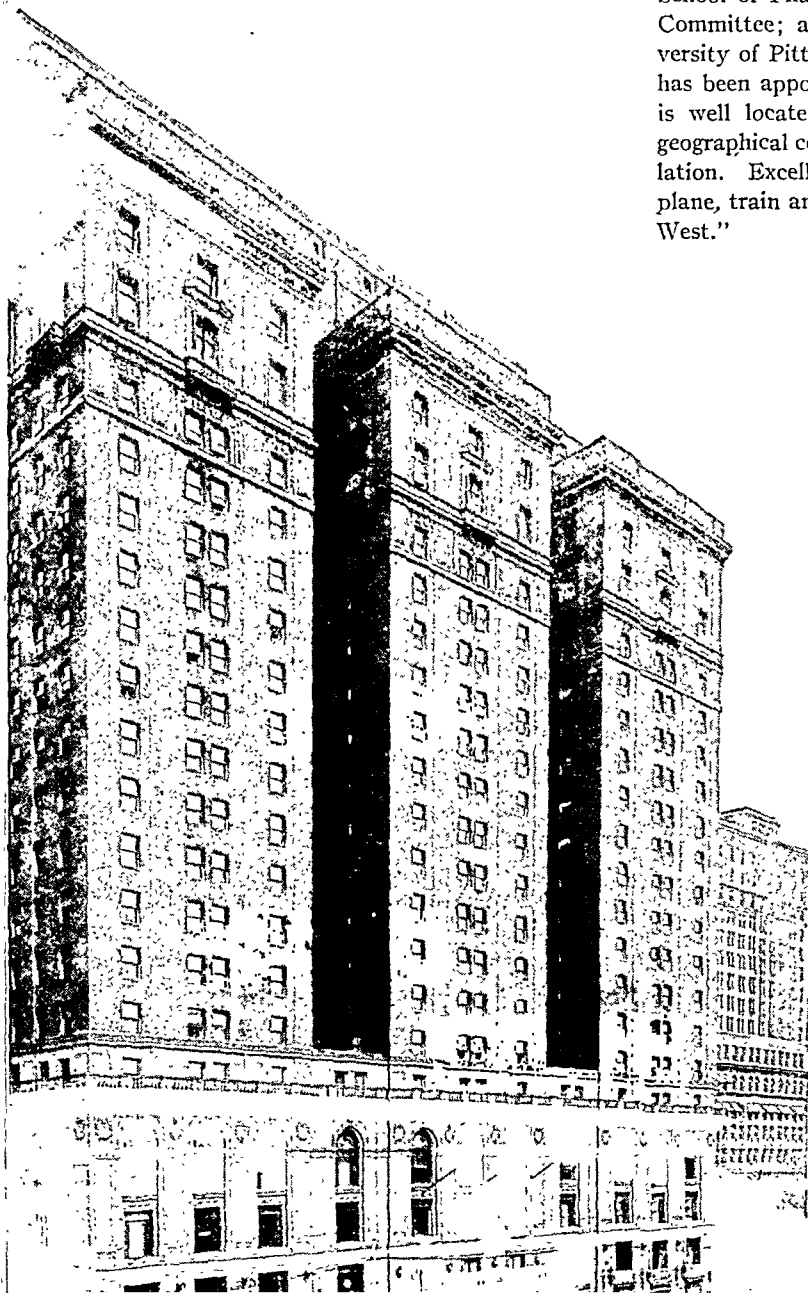
Conversatory offers a panorama of beautiful floral exhibits, including tropical gardens and an outstanding orchid collection. It is one of the largest buildings under glass in the world.

All room reservations will be cleared through a housing bureau developed by the Pittsburgh Convention Bureau. If a room is not available in your hotel of choice, the bureau will help you find accommodations elsewhere. In correspondence, be sure to indicate the time of your arrival

and departure; the number in your party and their names; and your second and third choice hotel.

All requests for room reservation should be mailed to the Housing Bureau, Pittsburgh Convention Bureau, Inc., Chamber of Commerce Bldg., Pittsburgh 19.

Local arrangements to make the pharmacist's stay in Pittsburgh a pleasant and memorable one, as well as profitable, are headed by Hugh C. Muldoon, dean of the Duquesne University School of Pharmacy, as chairman of the Local Committee; and by Stephen Wilson, of the University of Pittsburgh College of Pharmacy, who has been appointed local secretary. Pittsburgh is well located for the convention, being the geographical center of 73% of the nation's population. Excellent transportation facilities by plane, train and bus serve this "Gateway to the West."



Pharmacists will convene for the 1946 convention at the Hotel William Penn. Reservations should be made promptly through the Housing Bureau of the Pittsburgh Convention Bureau in the Chamber of Commerce Building.

HELP PLAN YOUR FUTURE

TWO years have slipped by since the last meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION. During this period history-making events have transpired on the stage of world affairs. Victory came to America after the worst war of all time. These years of tragedy have left no family untouched. Many pharmacists and pharmacists' sons paid the supreme sacrifice. By their deeds we have escaped foreign tyranny.

As we face the disconcerting postwar atomic age, we find that peace brings new challenges, new responsibilities and new problems to every group and profession. As members of one of the great health professions we must plan to make the future secure and act to keep abreast of far-reaching changes in our field.

That is why pharmacists in America or wherever they practice will find important and impelling reasons to attend the annual meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION at Pittsburgh, August 25-30. I hope that every pharmacist who wants to share in shaping the pharmacy of tomorrow and bring to his pharmacy the latest developments of today will find it possible to attend.

As a retail pharmacist who has been in association work most of a lifetime I can see that we *are* prepared to meet the task ahead as never before—if we have participation by the individual pharmacist, by you, in firmly supporting organized endeavor.

You are cordially invited to attend this first postwar session of the AMERICAN PHARMACEUTICAL ASSOCIATION and its affiliated organizations. It is an opportunity to help forge the future plans of your profession and to gain the information that we shall all need to build soundly in the uncertain period ahead. Since all pharmacy revolves around the corner drugstore in its direct contact with the patient, those who are commonly known as retail pharmacists have a great challenge before them in the future of the profession.

GEORGE A. MOULTON

PRESIDENT
AMERICAN PHARMACEUTICAL ASSOCIATION



Science News Capsules

ACCIDENTS, in a surprising percentage of cases, are caused by personality difficulties of the injured rather than unfavorable, accidental circumstances. In one study of 128 cases of head injury at the University of California Medical Center, a majority of the accidents were caused by "factors which bear on the character of the injured subjects." Among contributing factors are depression, overexcitement, drunkenness, anxiety, fear or anger.

FRESH BAKER'S YEAST is apparently not a good dietary supplement for the B vitamins as has been commonly supposed. Findings of University of Wisconsin scientists indicate that yeast eaters not only fail to get extra amounts of the vitamins but may even lose some of the vitamins ingested in other foods. Living yeast cells, it appears, tie up thiamin and riboflavin in a form that cannot be assimilated and probably also take some of the thiamin released from other food. If the yeast is killed, as in commercial preparation of dried yeast, it becomes a good source of thiamin and riboflavin for human nutrition.

PYRIDOXINE in adequate amounts is necessary for the proper utilization of proteins, experiments at the University of California indicate. It was shown in animals that tryptophane, an essential amino acid found in protein, is not utilized by the body but is excreted when there is either a severe or moderate deficiency of the vitamin.

A NEW METAL LENS, which focuses radio waves much as a glass lens focuses light, is expected to have widespread application in microwave radio relay systems. Designed primarily as adjuncts to the Bell telephone network, the improved relay systems promise to be useful in television and also in peacetime development of radar.

DURING TOTAL SOLAR ECLIPSE, the moon acts as a knife when it passes between us and the sun, cutting off layers of light from our star. By thus helping unscramble light from various parts of the sun's atmosphere, the moon has provided the key to practically all our knowledge of the sun. The few seconds allowed for study of the sun's atmosphere during each eclipse have revealed more about the vapors that make up the sun's atmosphere than we know of the earth's atmosphere 15 to 100 miles above our heads, astronomer S. A. Mitchell pointed out at the recent meeting of the American Philosophical Society.

GERM-FREE ANIMALS have been reared through the third generation at the University of

Notre Dame. This difficult feat, with significance in biological research, was accomplished by bacteriologist James A. Reyniers. Some years ago rats and other animals were reared germ-free by bringing them to birth by caesarian operation inside a sterile cylinder, then feeding only sterile food and admitting only sterile air. But until recently it was not possible to get them to reproduce because of dietary difficulties.

A NEW LIQUID RESIN protects furniture from cigarette and match burns and is resistant to most organic materials. Now widely used in making glass fabrics, the Du Pont product may find multiple uses as a transparent, glossy coating for construction materials and home furnishings.

SUPER-AIRLINERS of the future will be powered by uranium 235 and plutonium IF successful international controls prevent diversion of atomic energy sources to war purposes, predicts Dr. Glenn T. Seaborg, co-discoverer of plutonium and of the new elements americium and curium. If the world can insure its own safety against misuse of atomic energy, revolutionary changes in industry are already at hand, Dr. Seaborg believes. First should come the application of atomic energy in large stationary plants to generate electricity; then the propulsion of surface and submarine ships; and lastly—after the atomic pile has been freed of the load of graphite now necessary for keeping the output of energy within safe bounds—will come atomic powered aircraft.

SOUND WAVES that convert fog into rain may be used to keep future landing fields clear for aircraft. Successful preliminary tests by the Navy employed a battery of sirens so powerful that not only were fog particles merged into rain droplets but airfield personnel became nauseated and birds were blasted from the air. Engineers believe the answer lies in use of supersonic transmitters that send out waves of such high frequency that men and animals should not be affected. Full-scale tests will be conducted this summer. Improvements have also been made on the wartime method of dispersing fog by intense heat from controlled fires lining airport runways, but the supersonic method may prove better.

THYMINE, a part of the nucleic acid molecule, has striking anti-anemia properties, according to Dr. Tom D. Spies of the University of Cincinnati. Erythrocytes, which have been arrested in their development in the bone marrow of pernicious anemia

patients, "form huge islands of regeneration and within three or four days after treatment is begun, new cells begin pouring into the blood." Synthetic thymine and synthetic folic acid have similar effects, but the dose of thymine must be much larger than that of folic acid.

A VITAMIN K-LIKE SUBSTANCE that exerts a powerful action on the four fungi commonly responsible for athlete's foot has been discovered at McKesson and Robbins' research laboratories.

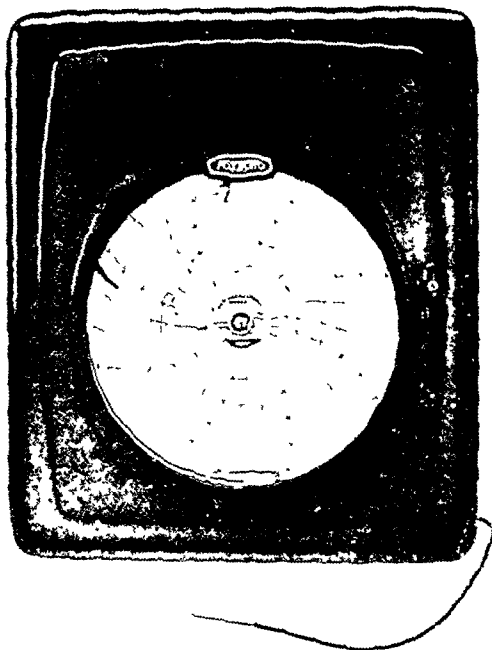
AMERICIUM AND CURIUM are the names of the two newest chemical elements, which were made synthetically from uranium and plutonium as a consequence of atomic bomb research. The elements were christened by their co-discoverer, Dr. Glenn T. Seaborg, who is now at the University of Chicago. Element 95 (Am) is named after the Americas, and element 96 (Cm) is named after Pierre and Marie Curie.

CLASSIFYING drug and chemical compounds, now numbered in hundreds of thousands, took a great stride forward with development of the system used to index possible antimalarial drugs for the war-time Survey of Antimalarial Drugs. Under the new system complete information on any one of more than 14,000 different drugs tested for antimalarial activity could be made available in less than one minute. The method is said to be equally satisfactory for any problem involving classification of miscellaneous compounds and is far simpler and more versatile than the old German system.

AN ALCHEMIST'S DREAM in reverse, the transmutation of gold into mercury in the cyclotron, has produced a standard for the measurement of length which is proving ten times as accurate as the one now generally accepted. Since 1893 the primary standard of length has been the spectrum line of cadmium. The green spectrum line of mercury transmuted from gold has a wave length that does not vary more than one fifty-billionth of an inch. Increased accuracy is due to the purity of the mercury isotope 198 thus produced.

INTERNATIONAL SCIENTIFIC INSTITUTIONS for research and development in various fields should be established by the United Nations Educational, Scientific and Cultural Organization, suggests Dr. Harlow Shapley, director of the Harvard College Observatory and president of Science Service. Referring to UNESCO, he stated, "There has been good cooperation in many scientific fields in the past, but we are on the threshold of much greater cooperation." He suggested a "Pasteur International Health Research Institute" and similar centers for scientific studies in astronomy, nutrition, marine biology and nuclear energy.

SCIENTISTS, plunged into public affairs through their concern over atomic power control, will need to learn something of the mental adaptability and willingness to compromise that characterize the politician if they intend to continue such participation, Dr. Isaiah Bowman, president of Johns Hopkins



FEVER THERMOMETER—At the suggestion of pharmaceutical manufacturing laboratories, the electronic device shown above was designed to measure the temperature of rabbits during pyrogen tests. Temperatures of a number of animals can be recorded automatically on the chart at specified intervals. The temperature sensitive element is a gold-plated, resistance type fever bulb, which is strapped into the rabbits for the duration of the test. Laboratory use of the fever recorder will form the basis for further work, by the Foxboro Co. and Edison-Splitdorf Corp., to develop a similar device for use in hospitals, clinics and physicians' offices.

University, intimated in an address before the first postwar meeting of the National Academy of Sciences. Such adjustments will not be easy for many thoroughgoing scientists to make, Dr. Bowman pointed out. Scientists are accustomed to reaching clear-cut solutions to their problems, and can prove that their conclusions are right. If they are right, compromise will be likely to seem absurd, even immoral. Such logical rigidity, desirable in science, results in deadlocks if attempted in government.

X-RAY TREATMENT OF CANCER and other ills without the patient suffering radiation sickness is possible through use of a 20,000,000-volt betatron, Dr. D. W. Kerst, inventor of the instrument, said during one of his Sigma Xi lectures. The University of Illinois physicist also indicated that a 250,000,000-volt betatron now under construction would produce pairs of mesons, atomic particles hitherto created only by cosmic rays from outer space. This is expected to open important research opportunities.

(Condensed from Science Service)



DR. GEORGE A. MOULTON, president of the American Pharmaceutical Association, is shown in the photograph with Lic. Adolfo L. Monserrate Anselmi (on right), president of the Puerto Rico College of Pharmacists.

A. PH. A. PRESIDENT REPORTS ON

by GEORGE A. MOULTON

THE first settlers of Puerto Rico, almost exclusively from Mediterranean Spain, brought with them the ancient Spanish system of pharmaceutical practice and modernized it, as time passed, with selected studies of pharmacy as practiced in North and South America. Its retail and wholesale pharmacies today are for the most part progressive, well stocked, and manned by well-trained personnel, many of whom are graduates of North American colleges of pharmacy.

Many old customs are maintained, such as the railing within the pharmacy behind which the pharmacist serves his patrons, the old show globes, ointment jars, crystal glass and porcelain shelf bottles. Exteriors still reflect the Spanish Renaissance decorative motifs on doorways and cornices, are neat, well marked as pharmacies, and done in brilliant pastel colors.

Contrasting this carry-over from the older influences are the large electric refrigerators housing an extensive stock of biologicals and parenteral medicines, found in even the smaller pharmacies. Prescription benches are modern, clean, well equipped for extensive laboratory procedures, and usually placed where the public may see the pharmacists at work.

Since cost of shipping is high, due to the required exclusive use of United States ships, the pharmacist manufactures—with alcohol distilled on the island at a very low price—most of his tinctures, elixirs, fluid extracts and syrups not requiring extensive laboratory standardization. In addition he may also prepare some colognes, toilet waters, rubbing alcohol, liniments and

private formula medication, as well as bottle common household remedies in liquid and dry packages for over-counter sale. These are sold considerably below prices here in the States, and cost as little as five cents per bottle for some items.

Many pharmacists are women, graduates from the island college, and intensely interested in their profession, as manifested by the consistent statements of approval of their work by their employers with whom I talked. All pharmacists under the new law must be graduates and members of their professional society, the Colegio de Farmaceuticos, before they may practice.

When I received the invitation from the Puerto Rico College of Pharmacists to visit with and address them on the occasion of their annual sessions, I accepted promptly for two reasons. First, I desired to make such contribution to their effort to better pharmaceutical practice on the island as I could; and secondly, I desired to bring to them the knowledge that the AMERICAN PHARMACEUTICAL ASSOCIATION was able to provide that leadership they needed and requested.

In all the years of association work that I have been permitted to know, I have seen nowhere a greater evidence of appreciation of the responsibilities a pharmacist must assume, or a greater respect for the AMERICAN PHARMACEUTICAL ASSOCIATION and the precepts it stands for, than those manifested to me by the pharmacists, the wholesalers and the sales representatives of United States manufacturers of Puerto Rico. It was assuredly a great morale builder to this president of the AMERICAN PHARMACEUTICAL

ASSOCIATION to be privileged to observe pharmacy on the island of Puerto Rico.

I frankly did not go there to be entertained though I was handsomely, for as I stated in my inaugural address I had a deep desire to see this ASSOCIATION assume its proper position in international pharmaceutical leadership at this time when the whole world turns its eyes to the United States and all of its people to assume this leadership. I therefore carefully planned the nine days there to cover the entire island, stop at each major community and address those who had gathered for that purpose.*

I was impressed with the interest and respect for pharmacy evidenced by those who practice it on the island. Many are graduates of our continental colleges of pharmacy, while the younger generation are for the most part graduates of their own college at Rio Piedras, the seat of the University.

The wholesalers maintain graduate pharmacists and in many cases operate retail establishments, having grown from the retail into the wholesale field of distribution. There are many women graduate pharmacists in practice both as owners and prescription employees. The repre-

S OFFICIAL VISIT TO PUERTO RICO

AT A BANQUET honoring Dr. Moulton during his stay on the island were (l. to r. below) Jaime Benitez, chancellor, University of Puerto Rico; Miss Bouret; Carlos G. Gonzalez, vice-president of the professional organization, the Puerto Rico College of Pharmacists; Miss Carlota Badillo Vadi, secretary of the College of Pharmacists; George A. Moulton, president of the A. Ph. A.; Mrs. Jaime Benitez; Adolfo L. Monserrate Anselmi and Mrs. Monserrate Anselmi; and Juan Garcia Platet, president of the Puerto Rico branch of the A. Ph. A.

sentatives of continental drug manufacturers are for the most part graduates of our colleges and take an active interest in organized pharmaceutical district groups. It appeared to me the average age of the retail pharmacist was younger

* In Dr. Moulton's original report to the Association's Council in November, 1945 (of which this is a condensation), he described his itinerary in detail, and also told of his visits with many individuals who warmly welcomed him. President Moulton exhibited to the Council various clippings, yearbooks, badges, menus, photographs and other souvenirs of his stay on the island. On behalf of the College of Pharmacists of Puerto Rico, each member of the Council was presented with a pavas, the native straw hat which is a symbol of the Popular Party. Dr. Moulton expressed appreciation for the many gifts and social events tendered him during his visit in September.—THE EDITOR.



than those of our continental pharmacies. Wages are lower than here, and hours are less.

Pharmacies

Pharmacies are neat, clean and well stocked with products made here and specialties made on the island. Spanish labels are usual, though English is also used. (English is taught at the college in the average ratio of 3 hours to 2 hours of Spanish.)

All prescription departments are well stocked, including good supplies of parenteral ampuls, vaccines and other biologicals, including all the newer drugs. In the larger pharmacies, laboratories for manufacturing and standardization of drugs are maintained with modern equipment. Electric refrigeration for drugs is general.

Prescription prices are low and doctors write heavily for their needs. Small districts do not have pharmacies, which requires long-range distribution in many cases.

Drugs

I was especially interested during my trip around the island and while on St. Thomas to note the names of continental manufactured products in wide use. United States firms maintain depots of distribution from San Juan and Ponce and other principal cities. Physicians are graduates of our colleges and yet seem to have more knowledge of the U. S. P. and N. F. than our colleagues here, and they write extensively for official drugs. There are no agencies as we know them, such as Whelan and Rexall, though these products in small quantities are sold by wholesalers. Ethical preparations for the most part supply the medication. I noted a sizable number of items of South American manufacture, and on questioning the pharmacist I was told these producers were becoming more energetic in their distribution campaigns. The drugs appear to be of good quality and attractively packaged.

There are at this time several new enterprises about to start on the island that have carefully surveyed the field of distribution they will supply, both on the island and in the southern Caribbean field, and have passed the financing stage. One new business will start production of pharmaceuticals shortly, having raised a three million dollar issue to finance it. Such manufacturing from raw materials found on the island should produce units per dollar for less than the same item produced in the United States and shipped into this territory. I believe this marks the beginning of an expansion plan of such manufacturing to supply Caribbean trade.

As you are aware, the island of St. Thomas is a free port, and tax-exempt basic material may be obtained for production of some commodities of the drug industry by manufacturers on that island, bay rum of their famous brand being an example.

Organizations

The Colegio de Farmaceuticos is the mother organization of the island and all pharmacists are required by law, after registration, to be members before practice and to cease practice if not in good standing with the Colegio. Each district has a district organization. The San Juan district, under J. Garcia Platet (Squibb) as president, were hosts to the annual meeting this year at the Condado Hotel. Secretary Carlota Badillo Vadi of the Colegio is very active and together with President A. L. Monserrate Anselmi they keep up the interest of the meetings, provide communications to the members, and give excellent leadership in pharmacy there.

Interprofessional Relations

During my visit I had occasion to meet many of the physicians. They unanimously told me they placed full confidence in their pharmacist, and fully accorded him his place in professional practice on the same plane as medicine. During the recent legislative endeavor to pass the new pharmacy laws, the physicians stood solidly behind the program and insisted on its passage.

There are large numbers of poor people, and a considerable problem of medical care on the island. With an insufficient number of physicians, a heavy responsibility is placed upon pharmacists to provide medication where possible and in accord with reasonable medical practice. The physicians know this situation and through the pharmacists they are able to cover more ground in the treatment of the simpler ailments. Hence the liaison between the two professions. Pharmacists serve in the District Hospitals where rather complete pharmacies are maintained.

Law Enforcement

Under the new law all pharmacies must have registered pharmacists in charge. Previously there were two classes of outlets, one of which was not covered by a registered pharmacist. The Board of Pharmacy at present is very efficient and is getting enforcement of the new law under way. There will be a problem in enforcement caused by the dispersion of pharmacies, and this will probably be eased by Board regula-

tion permitting innocuous drugs, home remedies and agricultural products to be sold by rural agencies without registered pharmacists, as is the case in the United States. Pharmacies must have permits and re-registration is required of pharmacists.

The new law is very comprehensive and gives the Board sufficient powers to protect the public welfare of the people. The Board gives every evidence that it will strictly police the Act.

Education

The College of Pharmacy of the University of Puerto Rico has a considerable number of alumni in practice on the island. The College is obviously making a sincere effort along educational lines but is laboring under numerous handicaps. It is not adequately staffed, is deficient in laboratories and equipment, and does not sound a strong voice in the University administration.

I gathered that the University could devote more of its means to the upbuilding and maintenance of the College were the demands made more emphatic. I might add that this condition is not confined to Puerto Rico. There are several university administrations that do not sense that pharmacy is a scientific profession, and requires an adequate plant with scientifically trained and professionally minded faculty.

On the other hand, there is evidence that the College is at least accorded the respect of the University as shown by the pharmacy tablet ensconced in the fresco of the main entrance of the administration building alongside those of the other academic schools. Their students and graduates are hardworking, mentally alert, and have a sincere interest in the school.

I would question the advisability of a visit by the Council on Pharmaceutical Education until such time as there is evidence of the University granting autonomy to the College of Pharmacy in its financial budget, classrooms, libraries and faculty.

A. Ph. A. of Puerto Rico

The fact that there is before the Council a petition for a new branch of the AMERICAN PHARMACEUTICAL ASSOCIATION in Puerto Rico* is evidence of the desire of these pharmacists to support this ASSOCIATION. The officers

chosen are capable men and I am confident, if this charter is granted, that it will be helpful to the common interest of our ASSOCIATION and pharmacy in Puerto Rico. There will be more than one hundred members on the island. Plans are in effect now to increase their membership, as the present officers tour the island to explain the advantages. In Puerto Rico pharmacy is practiced with as great, if not greater, appreciation of the ethical responsibilities of a pharmacist, than anywhere I know.

Following my talk to the student body at the College (about 200 students), I left the rostrum and went to the door to shake hands with each student. Each one told me he had a knowledge of the ASSOCIATION and great respect for it. Their student body president told me he would undertake the organization of a student branch, and in this the dean and faculty members voice their approval and desire to be helpful. I have spoken before several student bodies and I will frankly state that I have never seen one more interested in the speaker, and with a more alert understanding of what was being discussed. They speak well for the future of the A. Ph. A. in Puerto Rico.

Summary

I am confident that through this visit we have brought to Puerto Rico an understanding of what the AMERICAN PHARMACEUTICAL ASSOCIATION wants to do for pharmacy, what it is doing, and that it desires to provide that leadership in the drug industry that these people and those of our other territories need and plead for. I know that through this visit we have learned their problems and their needs, and their petitions will not in the future fall on untutored ears in this ASSOCIATION. We have spent nearly a hundred years to bring to the pharmacists of this country the benefits of our ASSOCIATION, but have done little to make ourselves known to the territories of this nation—or to understand their problems, so we could assist them.

It is the preachment of a free nation that we shall divert ourselves of territories held as protectorates. I believe this will ultimately be accomplished politically. If this be so, it is our definite responsibility to begin at once to bring to the other territories the same type of understanding and knowledge as the AMERICAN PHARMACEUTICAL ASSOCIATION has attempted to bring to Puerto Rico and the Virgin Islands by this humble attempt on my part.

* Since this report was given, an A. Ph. A. branch in Puerto Rico has been approved and chartered.

DEVELOPING PHARMACY IN CHINA

by E. N. MEUSER

DEPARTMENT OF PHARMACY, WEST CHINA UNION UNIVERSITY

THE old China is gone. During the recent war and since, a new and greater China has been born. This new China with its vast area and population of about 450 million people has begun its great postwar reconstruction and modernization educationally, industrially and politically, as well as spiritually and culturally. In these plans for reconstruction is included a very extensive program for development of medical services, including modern pharmaceutical education and practice. This program constitutes a splendid present opportunity for the fullest cooperation by Western pharmacy through its organizations, institutions and individuals. Further, it also offers a good opportunity for the development of better Sino-Western cultural relations. The following data outline a practicable method for cooperation through the Department of Pharmacy of the West China Union University, at Chengtu, W. China.

The Department of Pharmacy of the University is at present the only school of pharmacy permanently located in West China with a population of approximately 100 million people. It is the only institution offering a complete four year course in pharmaceutical education under university control in a population of at least 200 million.

As now organized, the Department consists of three main divisions: (a) academic, (b) research, (c) experimental manufacture of pharmaceuticals, etc. Each of these three divisions is under the supervision of a director and an associate director. Thus organized, and despite war conditions in China, the Department of Pharmacy has developed very rapidly since its inception in 1939. The future possibilities for expansion of service are limited almost only by the available resources in staff, equipment, buildings and working capital.

The courses in pharmacy cover a period of four years leading to the degree of Bachelor of Science in Pharmacy. It is hoped that in the not distant future postgraduate courses will also be opened. The University authorities have petitioned the Ministry of Education of China to have the Department of Pharmacy changed to a College of Pharmacy, and it is expected that in due course this petition will be granted by the government.

It is planned to develop modern pharmaceutical education and practice in China considerably, and in this plan it is the aim to establish new colleges and schools of pharmacy throughout the country. The West China Union University, through its Department of Pharmacy, will be expected to assume a large share of the training of teaching personnel for these new pharmaceutical education centers. This

constitutes a challenge as well as a great opportunity and responsibility.

The Public Health Administration of China plans to establish a large number of health centers throughout the country, and at least one pharmacist will be required for each of these. The University's Department of Pharmacy will be expected to cooperate in supplying this need for expanded medical service.

The Ministry of Education of China has appointed a Technical Committee on Pharmacy Education in China to deal with matters relating to pharmaceutical education and practice throughout the country. The director of the research division of our Department is a member of this committee. The University, therefore, has direct contact with the Central Government of China on pharmaceutical matters and has a splendid opportunity to cooperate in directing the future policies of pharmacy in all its branches.

The China Pharmaceutical Society has been reorganized with headquarters in the capital. A West China branch of the Association has also been established in Chengtu with headquarters at the University. Cooperation with pharmaceutical associations in western countries would be appreciated.

An Appeal for Cooperation

West China has already undertaken the tremendous task of postwar reconstruction, and is now rapidly being remodelled spiritually, educationally, economically and industrially. Practical assistance to China now in her special need to establish and develop a modern pharmacy program, particularly in West China, will do much to cement a lasting friendship of mutual

Americans have welcomed the closer cooperation and understanding between this country and our Eastern ally which has been kindled by years of wartime strife. As China enters the reconstruction period, it is in a spirit of furthering this cooperation that The Journal publishes Dr. Meuser's statement for the information of American pharmacists and for those in the profession and industry who may wish to aid Dr. Meuser in his work.—The Editor

benefit both culturally and commercially.

For those institutions and individuals interested in cooperating in this worth-while program, I shall mention some of the principal items needed for maintenance and development of pharmaceutical education and practice in West China:

1. Postgraduate fellowships, scholarships or assistantships for several Chinese pharmacists, for for one or two years of study in the United States. Upon completion of their work, these pharmacists would be expected to return to China for specified long-term pharmacy service either in teaching or as representatives of the organizations or individuals providing the fellowships

2. Salaries for qualified Chinese faculty members (about \$600 each per year)

3. A good reference library is badly needed, since almost no publications on pharmacy were received during the war (approximate cost, \$700)

4. For almost seven years the importation of laboratory equipment, chemicals and supplies was

impossible. Postwar replacements are urgently needed.

5. A building is needed for the academic and research divisions of the Department of Pharmacy. This building might well be named after the donor (approximate cost, \$75,000).

6. Equipment and furnishings are also needed for laboratories, lecture rooms and offices.

7. Botanic garden.

8. Other projects include endowment for the pharmacy college; proficiency scholarships and prizes; and materials for visual education.

Upon request, more specific, detailed information will be supplied or personal interviews arranged for those interested in the needs of West China.* Address: Dr. E. N. Meuser, 5 Chilton Road, Toronto, Canada.

* All financial or other contributions made toward the development of pharmaceutical education and practice in China through the Department of Pharmacy of West China Union University will be channelled through the Associated Board for Christian Colleges in China, 150 Fifth Ave., New York, N. Y.

PRESCRIPTION *Information* SERVICE

GREASELESS HAND CREAMS

Kindly send us formulas of greaseless hand lotions and creams.—O. A., Massachusetts.

A greaseless hand cream of the vanishing type given by Francis Chilson in *Modern Cosmetics* is formulated as follows.

Stearic acid, triple-pressed	15
2% quince seed mucilage	13
Lanolin.....	2
Cetyl alcohol....	2
Glycerin.....	8
Potassium hydroxide	0.8
Distilled water. . . .	58.7
Perfume.....	0.5

Dissolve the potassium hydroxide in the water and add the glycerin. Heat the stearic acid, lanolin and cetyl alcohol together until melted. Slowly pour the aqueous solution into the melted mixture with constant stirring. Add the mucilage after the cream has emulsified, when the

temperature has dropped to about 120° F. Continue stirring until the cream is cool and smooth, then add the perfume.

The use of glyceryl monostearate as an emulsifying agent will simplify compounding and produces a cream of good texture and stability. Chilson proposes a typical formula as follows:

Glyceryl monostearate.....	12
Hydrous wool fat or lanolin... ..	3
Cetyl alcohol.....	2
Glycerin.....	18
Distilled water.....	64.5
Perfume.....	0.5

All of the ingredients may be placed together in a water or steam jacketed container and heated with constant stirring until the glyceryl monostearate melts. Then continue stirring until it is cold enough to add the perfume oil. The consistency of the product can be varied by altering the formula or adding waxes.

A nonsticky hand lotion is proposed by Maison

G. de Navarre in *The Chemistry and Manufacture of Cosmetics*:

Glyceryl monostearate.....	3.5
Oleic acid.....	2.5
Glycerin.....	5
Alcohol S. D.....	5
Triethanolamine.....	1
Water.....	83
Preservative and perfume, <i>q. s.</i>	

Melt the glyceryl monostearate, oleic acid and glycerin with 50 parts of the water and bring to 90° C.; stir well. Separately, dissolve the preservative and perfume in the alcohol. Bring the triethanolamine and the remainder of the water to 90° C. and add slowly in a thin stream with stirring to the first melted mixture. When cool, incorporate the solution of preservative and perfume and stir again. Set aside overnight and stir briefly next day. Strain and bottle.

A thicker cream can be prepared by substituting stearic acid for oleic acid in the formula. The use of a preservative in hand lotions is essential. About 0.15% methyl parahydroxybenzoate is often used for the purpose.

VARNISH FOR LABELS

We would like to have a good formula for a shellac over labels on floor-supply bottles. Do you have any special suggestions for applying it so the job will last?—A. G., Ohio

Several formulas are given in *Pharmaceutical Recipe Book III*. A quick-drying label varnish has the following formula:

Vinyl resin.....	18 Gm.
Methylisobutyl ketone.....	41 Gm.
Toluene.....	41 Gm.

Mix the solvents thoroughly and then pour on the resin in a suitable vessel and stir until dissolved, avoiding excessive evaporation. The varnish may be thinned or thickened by increasing or decreasing the amount of the mixed solvents. (Both vinyl resin and methylisobutyl ketone are supplied by the Carbide and Carbon Chemicals Corp., 30 E. 42nd St., New York 17, N. Y.)

A shellac formula is as follows:

White shellac.....	300 Gm.
Copaiba.....	30 Gm.
Venice turpentine.....	6 Gm.
Denatured alcohol, <i>q. s. to</i>	1000 cc.

Dissolve the first three ingredients in the

denatured alcohol by stirring continuously, then strain the solution.

Application of Scotch cellulose tape around the edges of varnished labels may help to prolong their life.

SULFATHIAZOLE SUSPENSION

Will you please supply me with the formula for a 5% suspension of microcrystal sulfathiazole and 1% ephedrine hydrochloride? I understand some firms use gelatin as the suspending agent. How would the pH be adjusted to make the suspension isotonic?—R. D., New York

Microcrystal sulfathiazole may be suspended in a 2% solution of gelatin made from normal salt solution. The 1% ephedrine hydrochloride may be dissolved in the salt solution at the same time that the gelatin is added. The normal salt solution will provide the desired tonicity.

SALICYLIC ACID CRYSTALLIZES OUT

Please advise the reason why the salicylic acid crystallizes out in the following prescription:

Salicylic acid.....	1.8
Tr. quillaia....	9
Dilute alcohol, <i>q. s.</i>	90

—M. B., New York

The crystals noted are undoubtedly salicylic acid. While the percentage of alcohol would indicate that a permanent solution might be expected at 25° C., the solubility of salicylic acid in alcohol, at about the concentration specified, changes materially both with temperature change and with slight change in alcohol content. We believe no difficulty will be experienced if 10 cc. of the diluted alcohol is replaced with alcohol.

WHAT IS LETHANE?

Can you identify an insecticide called "lethane?" We have not been able to locate it in the literature.—G. H., Maryland

Lethane is a trade name for organic thiocyanate insecticides supplied by Rohm and Haas of Philadelphia. Lethane 384, for example, contains 50% by volume of β -butoxy- β' -thiocyanodiethyl ether in highly refined light petroleum oil. The manufacturer will supply information on the several types available.

The Hospital Pharmacist

PHARMACY'S SPECIALISTS NEED SPECIALIZED TRAINING

by EDWARD SPEASE

FORMER DEAN, WESTERN RESERVE UNIVERSITY SCHOOL OF PHARMACY

HOSPITAL pharmacy is no less a specialty in the field of pharmacy than is pediatrics or obstetrics in the field of medicine. Time was when the general practitioner, now internist, practiced all the specialties in the medical field just as the pharmacist has in his field. Now we, in pharmacy, find ourselves faced with the need for more training for special purposes.

Every college can give some instruction in hospital pharmacy, just as the medical school does in pediatrics or ophthalmology to its undergraduates. That instruction does not make a specialist of the graduate. It does help him to see and understand what these particular fields are and it teaches him what training is essential, over and above his general course, to fit him to be a specialist, such as a hospital pharmacist.

Some colleges of pharmacy have not interested themselves in any way in hospital pharmacy, thus depriving their graduates of information which they should have when they have completed the four-year course. Other colleges have given lecture courses such as belong in the undergraduate curriculum. Still others have made it possible for the graduate to secure the Master's Degree with the major interest in hospital pharmacy. Some hospital pharmacists have found it not only advantageous but necessary to their success to take additional training beyond the Master's to fit them for the special work they are doing.

Undoubtedly there will be some who will still point out that a certain person has been practicing hospital pharmacy in a certain hospital for many, many years without any special training for his position. The best that may be said, in such a case, is that he came up the hard way and that it would have been better for his hospital

if he could have been trained beforehand. He, himself, will be found to be an exponent of further training in hospital pharmacy within the schools, and with a particular accent upon training within the hospital.

Most colleges of pharmacy are located where they may make contacts with hospitals and medical schools, but even those that are not so fortunately located do have a job to do in this field. There is scarcely a community today, where a college of pharmacy is located, that does not have a hospital within range of its activities. The college therefore has a duty to that hospital and to the community they both serve, to see that the hospital has proper pharmaceutical service, and having established that service, then the college may take advantage of this arrangement for its undergraduate and graduate courses in hospital pharmacy.

Certain phases of hospital pharmacy may be taught by any pharmacy teacher now on our faculties; but the graduate work in hospital practice should be taught by the pharmacist who is actually in, or has had experience in, hospital pharmacy.

The colleges should see to it that their staffs are provided with the hospital periodicals and that some one member follows them carefully. This one member should also visit hospital pharmacies, become acquainted with the personnel and read their literature. One member of every college of pharmacy faculty should be interested in hospital pharmacy. This one faculty member should be sent to certain hospital conventions. He should become familiar with the names of, and in many instances become personally acquainted with, the most active people in the hospital world. It is the job of the dean

to see that this faculty member does not have to do all this work for his college at his own personal expense.

It will not be long before the hospital administrator will consider an applicant as pharmacist for his hospital only if the applicant has served a hospital pharmacy internship. At present he requires that his pharmacist should have hospital

pharmacy training, or experience. Many of the colleges of pharmacy have not kept abreast of this specialty as they should have, therefore the places where hospital pharmacists may be adequately trained are few. The demand for hospital pharmacists cannot be filled. It is high time that pharmacy faculties give the subject of hospital pharmacy some serious thought.

DESIGNING A HOSPITAL PHARMACY

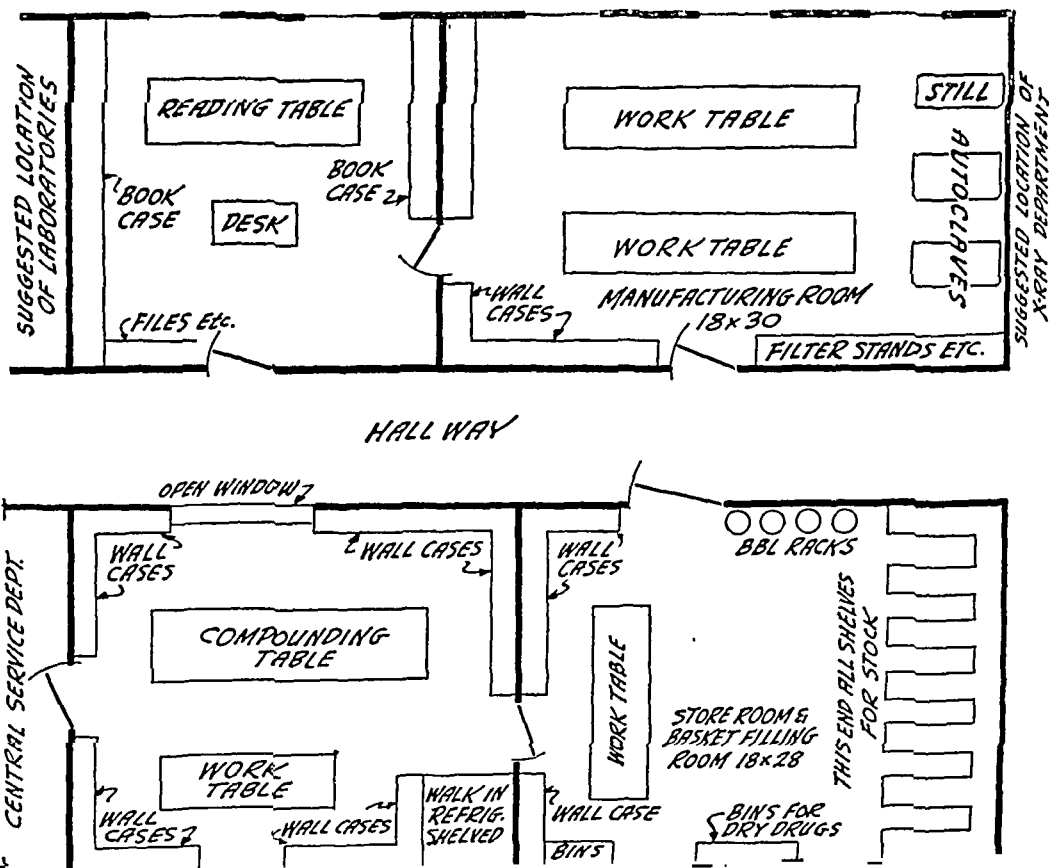
FOR 250 BED INSTITUTION WITH OUTPATIENT CLINIC

by HANS S. HANSEN

CHIEF PHARMACIST, GRANT HOSPITAL OF CHICAGO

In spite of the fact that hospital architects tell us that "reduction of traffic is paramount" in planning a hospital they (the architects) still locate pharmacies in the basements of new hospitals.

Pharmacy departments in hospitals are too often considered adjunct departments, considered and treated as a stepchild (remember Cinderella!). With the exception of the nursing, no other department has more direct contacts with



the patient than the pharmacy department.

This being true it must of necessity be an important department and considered so. The extent of service that a hospital pharmacy can render is only limited by the knowledge and appreciation of the hospital administrator.

Believing all this, I would locate the pharmacy department as centrally as physically possible. The central service department as well as the laboratory and X-ray departments should adjoin the pharmacy.

A good many procedures carried on by the central service should be under the direct supervision of the pharmacist. Solutions and stains for laboratory use as well as X-ray solutions should be prepared by the pharmacy department. These factors plus the reduction in traffic explain my plans (see drawing) for the proximity of these four departments.

In my plans for this 250 bed hospital pharmacy, I have made no provision for the manufacture of sterile intravenous solutions. I have yet to be convinced that it is an economical procedure for this size institution. If it should be desired to manufacture sterile solutions, it would require

three additional rooms—a wash and cleaning room, a manufacturing room and a sterilizing room. It should be an air-conditioned, dust-free unit.

The pharmacy unit should consist of an office and pharmaceutical library, occupying a room approximately 18 by 18 feet. Adjoining this should be located the manufacturing unit of about 18 feet by 30 feet. Across the hallway I would locate the dispensing unit, a room approximately 18 feet by 20 feet.

Adjoining this unit I would locate the store room with facilities for the filling of floor baskets. This should be about 18 feet by 28 feet. On the other side of the dispensing unit with a connecting door, I would locate the main room of the central service department.

If possible, it would be well to install dummy elevator service to all floors in order to further reduce traffic. This elevator service should also reach the outpatient clinic for prescription service.

Ether and other explosives should be stored according to existing fire regulations.

Reprinted from *Hospital Management* with permission.

HOSPITAL PHARMACY RANKS DECREASE 6%

The number of pharmacists employed in the nation's hospitals decreased from 4183 to 3921 during the year ending September 30, 1945, representing a loss of about 6%. There were 139 fewer full-time hospital pharmacists and 123 fewer part-time pharmacists. This is the first time since the beginning of the war that Selective Service inductions have resulted in an overall decrease in the number of practicing hospital pharmacists.

While the number of hospital pharmacists decreased in 1945, an actual increased need was indicated by the fact that the number of hospital beds increased from 1,729,945 to 1,738,944, the number of admissions from 16,036,848 to 16,257,402, and the number of patient days from 475,607,484 to 512,915,155.

Data on hospital pharmacists were compiled by the Council on Medical Education and Hospitals of the American Medical Association as part of its annual survey of hospital personnel and service. Replies to a census questionnaire were received from nearly 98% of the registered hospitals. Over 99% of the hospitals approved for internships and residencies in specialties furnished reports to the Council.

The tabulation is given below by states.

STATES	PHARMACISTS		STATES	PHARMACISTS	
	Full Time	Part Time		Full Time	Part Time
Alabama	49	3	New Hampshire	7	5
Arizona	26	..	New Jersey	101	19
Arkansas	26	1	New Mexico	24	..
California	372	49	New York	435	45
Colorado	45	8	No. Carolina	62	6
Connecticut	47	5	No. Dakota	6	1
Delaware	5	5	Ohio	122	26
District of Columbia	32	1	Oklahoma	46	6
Florida	106	..	Oregon	39	4
Georgia	73	6	Penna.	201	62
Idaho	13	1	Rhode Island	23	6
Illinois	231	21	So. Carolina	36	4
Indiana	59	11	So. Dakota	13	3
Iowa	41	7	Tennessee	53	9
Kansas	50	6	Texas	184	14
Kentucky	36	2	Utah	17	7
Louisiana	66	2	Vermont	5	1
Maine	16	2	Virginia	68	4
Maryland	61	8	Washington	79	10
Massachusetts	116	12	W. Virginia	16	2
Michigan	123	20	Wisconsin	66	19
Minnesota	50	12	Wyoming	6	..
Mississippi	29	1	TOTALS 1915	3461	460
Missouri	99	10	1944	3600	583
Montana	12	2	1943	3563	605
Nebraska	35	10	1942	2698	533
Nevada	4	2	1941	2382	497
			1936		1901

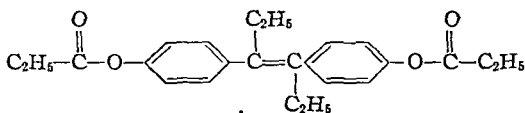
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PRODUCTS RECENTLY ACCEPTED BY THE
A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY

Council descriptions of drug products are published regularly in *This Journal* as they are accepted. Rules upon which the Council bases its action appeared in the November, 1945 issue (6: 329, 1945) and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago 10

DIETHYLSTILBESTROL DIPROPIONATE.—

The *di*-propionyl ester of α, α' -diethyl-4,4'-stilbene-diol.— $C_{24}H_{28}O_4$ —M. W. 380.46.—Diethylstilbestrol dipropionate may be prepared by esterification of diethylstilbestrol with propionic acid chloride and purified by recrystallization from alcohol. It may be represented by the following structural formula:



Actions and Uses.—Diethylstilbestrol dipropionate is used for the same conditions for which estrogenic substances are employed, although it is claimed that reactions such as nausea and vomiting appear to be less frequent with a dipropionate salt than with free diethylstilbestrol when the drugs are administered intramuscularly in oil. Diethylstilbestrol dipropionate is relatively slowly absorbed from the oil depot and causes a lower blood stream concentration, although one of more prolonged duration.

Dosage.—Diethylstilbestrol dipropionate in Oil is administered intramuscularly. The following average dosage by injection should be modified to meet individual requirements:

Menopause }
Senile vaginitis } from 0.5 to 2 mg. two or three times a week.

Suppression of lactation—5 mg. once or twice daily for a total of from two to four days.

After a therapeutic effect has been obtained, the dosage should be reduced until the minimum effective dose for maintenance has been established.

Tests and Standards.—

Diethylstilbestrol dipropionate occurs as an odorless, tasteless, white, crystalline powder which melts at 105–107° C. It is readily soluble in acetone, benzene, ether, chloroform, hot ethyl alcohol and hot methyl alcohol; soluble in vegetable oils; very slightly soluble in water and dilute mineral acids; and insoluble in alkaline aqueous solutions.

Dissolve 10 mg. of diethylstilbestrol dipropionate in 2 cc. of concentrated sulfuric acid: an orange color is produced which disappears on dilution with water. Add 1 cc. of 50 per cent solution of antimony pentachloride in dry alcohol-free chloroform to 5 cc. of a dilute solution of diethylstilbestrol dipropionate in the same solvent: a red colored solution is produced. The residue obtained in the assay for diethyl-

stilbestrol dipropionate melts at 168–171° C. and responds to tests for diethylstilbestrol.

Dry an accurately weighed specimen of diethylstilbestrol dipropionate to constant weight in a partial vacuum at 80° C: the loss in weight does not exceed 0.5 per cent. Ignite an accurately weighed specimen of diethylstilbestrol dipropionate after the addition of concentrated sulfuric acid: the residue does not exceed 0.05 per cent. A suspension of 0.1 Gm. of diethylstilbestrol dipropionate in 10 cc. of diluted alcohol is neutral to litmus paper.

Dissolve approximately 0.3 Gm. of diethylstilbestrol dipropionate, accurately weighed, in 10 cc. of a 15 per cent solution of potassium hydroxide in methyl alcohol and heat under reflux for thirty minutes. Cool, dilute with 100 cc. of water, transfer to a separator and acidify with dilute hydrochloric acid. Extract the mixture with four separate portions of ether, combining the ether extracts; wash the ether solution with three separate portions of 5 per cent sodium bicarbonate solution and once with water; decant the ether solution through a small cotton plug into a tared beaker; rinse the separator and cotton plug with fresh ether and evaporate the ether extract in a stream of warm air. Dry the residue to constant weight at 75–80° C.: the weight of the diethylstilbestrol obtained, multiplied by the factor 1.418, is equivalent to not less than 98 per cent nor more than 100.5 per cent of the weight of the specimen.

The following dosage form has been accepted:

WINTHROP CHEMICAL COMPANY, INC., NEW YORK

Solution Diethylstilbestrol Dipropionate (in Olive Oil): 0.5 mg. per cc., 1 mg. per cc. and 5 mg. per cc.: 1 cc. ampuls.

HEXAVITAMIN (See *A. M. A. Journal*, Aug. 11, 1945, p. 1099).

The following dosage form has been accepted:

WALKER VITAMIN PRODUCTS, INC., MOUNT VERNON, N. Y.

Capsules Hexavitamin: Each capsule contains 2500 U. S. P. units of vitamin A, 200 U. S. P. units of vitamin D, 1 mg. of thiamine, 1.5 mg. of riboflavin, 30 mg. of ascorbic acid and 10 mg. of niacinamide.

ADR

DENTAL REMEDIES RECENTLY ACCEPTED BY
A. D. A. COUNCIL ON DENTAL THERAPEUTICS

Admission to Accepted Dental Remedies means that a product and the methods by which it was marketed at the time of consideration were not found to be in violation of the published rules of the Council on Dental Therapeutics. A summary of the rules appeared in THIS JOURNAL, 7:153 (April), 1946. Accepted products are reconsidered periodically.

PENICILLIN AND RELATED PREPARATIONS¹

Penicillin Sodium Salt-Bristol, in vials containing 100,000 Oxford Units.

Penicillin Calcium Salt-Bristol, in vials containing 100,000 Oxford Units. Manufactured by Bristol Laboratories, Inc., New York, N. Y.

¹ Accepted Dental Remedies, Ed. 11, p. 162

Colleges

JOHN GROVER BEARD, 58, dean of the University of North Carolina School of Pharmacy since 1931, died on April 23 after being stricken with a cerebral hemorrhage. Dean Beard had been a member of the faculty since his graduation thirty-seven years ago. He had held many posts in the AMERICAN PHARMACEUTICAL ASSOCIATION and was a past-president of the American Association of Colleges of Pharmacy.

The Vermont Pharmaceutical Association, at its midyear meeting, went on record as favoring prerequisite legislation that would require pharmacy college graduation for licensure.

Dr. Thomas D. Rowe, assistant dean of Rutgers University College of Pharmacy, has been named to succeed Dr. Ernest Little as dean of the College. The appointment was made at the request of Dr. Little, who has been dean since 1926. He will continue to serve the College as professor of chemistry, continuing a teaching career that has been uninterrupted since 1911. Dr. Rowe, the new dean, was formerly a member of the faculty in the School of Pharmacy at the Medical College of Virginia.

John F. O'Brien, retail pharmacist of Rochester, N. Y., has been awarded the Gregory Medal by the Alumni Association of the University of Buffalo School of Pharmacy for "performing distinguished work in behalf of all of the pharmacists of the state."

Dr. Rufus A. Lyman, dean of the University of Nebraska College of Pharmacy since 1915, will retire on June 30. Dr. Lyman, a life member of A. Ph. A., is the senior ranking dean on the Nebraska campus and has been a leading figure in American pharmaceutical education for many years. Dr. Joseph B. Burt, chairman of the department of pharmacy and pharmaceutical chemistry, will succeed Dr. Lyman as dean.

A two day clinic and seven day refresher course

for practicing pharmacists were held at the University of Buffalo School of Pharmacy in April.

The freshman quota of 100 students for the fall term at the St. Louis College of Pharmacy and Allied Sciences has already been filled. The new class will bring total enrollment to 250. Provision has been made to accommodate former students who may return from service in the next few months.

Pharmacists of northwestern Ohio were invited to attend refresher lectures and laboratory demonstrations at the Ohio Northern University College of Pharmacy on April 25. If there is sufficient interest among pharmacists, Dean Raabe plans to offer refresher lectures each Thursday.

One year of pre-pharmacy education in addition to the four year course was favored in resolutions passed at district meetings of the National Association of Boards of Pharmacy and the American Association of Colleges of Pharmacy held in Spokane, Wash., in April.

Prof. Hugh C. Vincent of the State College of Washington School of Pharmacy has resigned to accept a post in Abbott's research division.

Capt. Frances Marr, formerly of the W. A. C., has been appointed instructor in the pharmacy laboratories of Temple University School of Pharmacy. Before enlisting, Miss Marr was the pharmacist for Friends Hospital, Philadelphia.

At a dinner to be held June 5, the Alumni Association of the Philadelphia College of Pharmacy and Science will honor the more than 450 graduates who served in the armed forces during World War II.

For the first time in its 60-year history, the University of Buffalo School of Pharmacy has a limitation on enrollment. The School now has 83 freshmen and expects to register 100 more next September. Every effort is being made to accommodate qualified veterans from the part of New York which the School normally serves.

Dean Francis J. O'Brien of the Albany College of Pharmacy was honored on May 6 at a testimonial dinner held by the Alumni Association. Dean O'Brien, an alumnus of the college, is completing a quarter century as a member of the faculty.

Winners of 10 scholarships offered at the University of Connecticut College of Pharmacy will be announced about July 15.

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Philadelphia College of
PHARMACY AND SCIENCE

Typical Days

FROM THE SECRETARY'S APRIL DIARY

—1st—

NO FOOLING on this first day of April, which was spent in large part attending the annual meeting of the American Foundation for Pharmaceutical Education at its New York office. Raising more than a million dollars from the drug industry for distribution to worthy colleges of pharmacy is only one of the accomplishments of the Foundation. Its substantial gifts to the American Council on Pharmaceutical Education for accreditation expenses and the \$100,000 investment in a survey of pharmacy and pharmaceutical education under American Council of Education auspices, which was approved at this meeting, indicate the broad scope of the Foundation's interest in the progress of pharmaceutical education. Took home a request from the Foundation to A. P. H. A. for a plan to establish a Directory of Pharmacists. The luncheon recess gave opportunity for brief conversation with Newcomb, Swain, Little, Dunning and many other proxies and directors. At 5:30 p. m. on the train to Washington arriving in time to catch up with the heavy Monday mail.

—2d—

And now a full day at the desk with the staff and secretaries catching up on membership correspondence and looking over proposed plans for a memorial flagstaff to further beautify the grounds. Among the visitors came "Vic" Keys, snappy and efficient Ohio State Association secretary to urge us to address his state convention on June 5 at Columbus. He won.

—3d—

Most of this day getting out the first complete preliminary announcement of the coming Convention after much correspondence, long distance telephoning, committee and Council action. Pittsburgh, in August, is the answer to the requirements of all the organizations meeting during A. P. H. A. week because transportation, hotel accommodations and meeting facilities shape up to best advantage. Providence has graciously relinquished its prior claim to consideration since hotel space and travel facilities to that fair city are still uncertain. And now much labor in arranging for the program. With Sections, Conferences, Auxiliaries and Officers all cooperating, 1946 should prove a banner Convention year.

—4th—

In the early afternoon to the Social Security Building, which now houses the Administrative Offices of the Food and Drug Administration, for a

very important conference with Commissioner Dunbar, Chief Inspector Latrick and Medical Director Herwick on the proposal to require warning notices on prescription labels regardless of the prescriber's wishes. Found these officials sympathetic with our views in general [see p. 242], but adamant on thiouracil. Apparently it is considered more efficient to compel the pharmacist to add warnings than to educate the doctor to include them in his directions. Late in the afternoon came Treasurer Schaefer to view the work of painters, pointers and gardeners for which he will ultimately have to draw the ASSOCIATION'S check. To dinner with the treasurer at O'Donnell's and near the end reminded him of the function of his office. Later much discussion of current ASSOCIATION business and settling a number of troublesome fiscal problems.

—5th—

Glad to welcome Dean Reif of Pittsburgh University's College of Pharmacy who came to discuss Convention details and found him fully cooperative as usual and also way ahead of us in the planning for the comfort and entertainment of visitors. At 1:00 p. m. to Baltimore by train with Treasurer Schaefer to meet the auditors and check the bonds and other property of the ASSOCIATION in the security vaults. With this annual chore completed, wended our way homeward for the week end.

—6th—

An amusing incident upon entering a large pharmacy to buy some drugs—of all things. Found the pharmacist eyeing us up and down, again and again, and finally blurting out, "You remind me a good deal of the dean of a pharmacy school I attended who is a big shot now in Washington." Hearing nothing more detrimental and learning his name from the card on his white coat we confessed but refused the professional discount hastily offered.

—7th—

After a day of rest, a pleasant trip by motor to the Ben Franklin Hotel at Philadelphia preparatory to meeting members of District No. 2 i session there for two days. A quick trip to Washington to spend Monday morning at the desk and then back to Philadelphia to address the assembled college professors and pharmacy board members as their guests on "Pharmacy in the Affairs of the Nation." And it was a pleasure to meet again with so many former coworkers in this active district and especially to greet Dr. and Mrs. Ambros Hunsberger and the officers of the Philadelphia Branch who acted as hosts.

—9th—

Early today by automobile to Trenton where the State Board of Health met for what it considered an almost final session because legislation in the hopper designed to replace the twelve-member board with a seven-member council had passed both houses but had been amended in the Senate and was expected to be approved in amended form. Later dispatches revealed that the amendments were not approved and the bill died so the Board continues

to live. Then back to Washington arriving late and tired.

—10th—

Amid all of the invitations rolling in from state pharmaceutical associations, food and drug officials' meetings, by telegram, air mail and special delivery, compelled to realize that no device has yet been perfected which deposits a man in two places at one time. Sorry to have to telephone Dick Richards I could not possibly make the Florida meeting because of serious developments at the Capitol. At luncheon with Assistant Surgeon-General R. C. Williams at U. S. Public Health Service headquarters nearby, discussing many medical and pharmaceutical problems. Later on the telephone discussing medical problems affecting pharmacists with Austin Smith and others at Chicago.

—12th—

A pleasant interruption to the daily routine in the form of a visit from Agnes Lothian, librarian of the British Pharmaceutical Society, who is visiting in the United States and spending her time profitably in the inspection of libraries at various universities and institutions identified with pharmacy. Later in the day a visit from Acting Dean Sumerford of the University of Georgia School of Pharmacy who joined us at dinner at the Madrilion.

—13th—

After a busy morning at the office without telephone interruptions started for New Jersey via Pennsylvania Railroad only to find at Baltimore that the train was being detoured and would reach New Jersey via Harrisburg, Lancaster, Philadelphia and way stations. Just time enough to hop off and taxi to the B. & O. Station and save two hours in reaching destination. A freight wreck had tied up Pennsylvania's main line on the 100th anniversary of the founding of P. R. R.

—15th—

Monday mornings seem to get busier every week so staff meetings must frequently be held at luncheon. With transportation furnished by Justin Powers we can eat, talk and come to decisions in nearby Virginia and return to the office within the hour. Off on the Crescent Limited at 6:25 p. m. for Macon to attend the Georgia Pharmaceutical Association meeting.

—16th—

With a four-hour layover in Atlanta took occasion to visit the Southern College of Pharmacy and found the faculty mostly absent because of participation in the Georgia convention at Macon. Members of the senior class had also left to attend the meeting and that is good education for these youngsters. Arrived at Macon in the early afternoon and in the middle of a downpour but reached the Dempsey Hotel fairly dry, thanks to a friend who had come to meet R. J. Dahl of E. R. Squibb & Sons, a fellow orator at the convention.

Joined Georgia pharmacists and their ladies at the annual dinner and entertainment which was unique in that a Methodist minister interspersed whole-

some wit and philosophy with magic, ventriloquisms and other fun producers as expert as they were unusual. Seeing all the Georgia "peaches" adds new significance to the song. Among the many friends old and new who came to greet us was former Jerseyman Frank Mederer, who married into the wholesale drug business at Valdosta, Ga.

—17th—

A most enjoyable breakfast with Mr. and Mrs. Charles Evans and President and Mrs. Homer Avera; then to the morning session of the convention to deliver a talk on "Pharmacy in the Affairs of the Nation," which was followed by surprise election to honorary membership in this fine 71-year-old organization. At luncheon with Charles Evans, Senior and Junior, their wives, Dr. and Mrs. R. C. Wilson and "Chicken" Chichester, a jolly group and a good southern style luncheon. And now by automobile as guests of Dr. and Mrs. Wilson to Athens, Ga., seat of the state university. After a delightful trip around the university campus, enjoyed the fine southern hospitality of the Wilson home at supper and then to the Georgian Hotel for a restful night.

—18th—

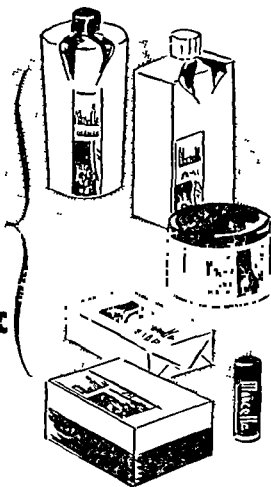
Early in the morning to the university campus for an inspection of the pharmacy college with Dr. Wilson as guide and later a visit to other parts of the campus with Acting Dean Sumerford, meeting many a Georgia educator. Both old and new construction on this campus are impressive and between G.I.'s, G.P.'s and other civilian students, this is a crowded community with married G.I.'s living in a trailer camp that must cramp the style of many a student but is a part of the sacrifice being made to make up for lost time in the training of the men who must eventually guide this nation in its relations with our allies and former enemies.

A delightful luncheon with southern fried chicken and strawberry shortcake at the Wilson home to top off a busy morning. Following further tours about the university, and time out to look over some notes, met Charlie Evans and Dr. Sumerford who took us to the dining hall where the newly organized student branch of the A. Ph. A. held its first dinner and received at our hands the charter of the organization which we hope will add many an active member for the years to come. It is a fine group of young men and women who kept us busy answering questions showing their keen interest in the future of the profession they are about to enter. When Dr. and Mrs. Sumerford finally saw us off on the train to Washington, it seemed the day had been very well spent with plenty of inspiration derived to provide the urge to carry on for these and other young groups around these United States who will man our pharmacies, our laboratories, our teaching staffs and our drug industries in the next generation.

—19th—

Arriving in Washington late in the afternoon with only time to do the most urgent jobs prior to the week end.

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—22d—

Most of this afternoon in serious conference with Commander Briggs, director of pharmacy affairs in the Veterans Administration, and George Frates on procedures for supplying V. A. with pharmaceutical services. Working late at the office after the evening meal to unpile the ever-mounting stack of correspondence and reading matter.

—23d—

Many a telephone call and letter commending the stand we have taken on the warning notice problem with respect to prescriptions. Again burning the midnight oil at the office, this time with the accounting staff.

—24th—

Among the visitors of the day, especially glad to welcome Pharmacist Woods of the U. S. Public Health Service, recently returned from a number of visits to hospitals and loaded with information and suggestions for improvement of the services of pharmacists. Another evening at the office with the accounting and membership staff and making some progress.

—25th—

Delighted to note the splendid progress made by Chairman Powers of the National Formulary committee on speeding the page proofs of this important book of standards. The ASSOCIATION now reaps the benefit of his careful planning and steady plodding. N. F. VIII will be not only an outstanding book of official standards but it will appear according to schedule unless some unforeseen difficulty arises. Much joy for our secretary whose husband arrived today from overseas, after an absence of more than a year.

—26th—

Today a visit from Dr. Rutstein now spending full time with the American Heart Association on the problems of rheumatic fever. Discussed with him the possibility of aiding this movement through National Pharmacy Week. Late into the night working with staff members on the barbiturate survey and hoping to publish a basic report on this difficult regulatory problem. And now comes Glenn Sonnedecker, editor of *THIS JOURNAL* reminding in solemn tones that the deadline for June *JOURNAL* copy is April 28, which coming on Sunday means the 27th and that being Saturday, which is not a working day in a 5-day week, means the deadline is here today.

R. D. Z.

BRACKEN NAMED TO U. S. P.

L. D. Bracken, Seattle pharmacist and member of A. PH. A., has been elected to the Revision Committee of the U. S. Pharmacopoeia. Noted for many years as a leading retail pharmacist, Mr. Bracken's three prescription shops compound from 700 to 800 prescriptions daily.

A. Ph. A.

Branches

LOCAL BRANCHES

[NEW YORK—Dr. Louis Hirschhorn addressed the branch on "The Doctor and the Prescription" at the March meeting. The unique role of the prescription in its relation to the patient, pharmacist and physician was discussed.

At the April meeting "Some Recent Advances in Chemotherapy and Pharmacology" was the topic for discussion. Arthur P. Richardson, head of the Division of Pharmacology, The Squibb Institute for Medical Research; and Sterling Brackett, Chemotherapy Division, Stamford Research Laboratories of the American Cyanamid Co., were guest speakers.

MICHIGAN BRANCH—The R. L. McCabe Awards for outstanding papers by students in pharmacy were presented at the "Student Night" meeting on March 26. First prize was awarded to Mary E. Beal, University of Michigan, for her paper on "Thiouracil;" second prize to Grace M. Bunker, Detroit Institute of Technology, for her paper on "Women in Pharmacy;" and third prize to Jerry Efros, Wayne University, who presented a paper on "Pharmacy in Japan."

NORTHWESTERN OHIO—Recent developments in the field of virus research were outlined at the April meeting by Fred H. Thistlethwaite in a talk entitled "Newer Methods of Combating Diseases of Biological Origin." He pointed out that this work may lead to the control of several diseases that now harass the human race. Some of the work which has been done on Rickettsial diseases, especially typhus and spotted fever, was also discussed. The Professional Relations Committee report on "Ear Preparations" was given by Edwin Bohrer.

WESTERN NEW YORK—At the April meeting, Jack O'Brien, chairman of the Legislative Committee of the New York State Pharmaceutical Association, gave a summary of the laws pertaining to pharmacy which were introduced and passed at the recent session of the state legislature. He emphasized regulations written into the new law controlling the dispensing of barbiturates and pointed out the importance of every pharmacist becoming familiar with its requirements. An interesting discussion of various phases of the law followed Mr. O'Brien's talk.

Officers have been elected for the branch as follows: Mearl D. Pritchard, president; Joseph B. Sprowls, first vice-president; John L. Ripton,

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second vice-president; S. Walley Bower, secretary; and Francis P. Taylor, treasurer.

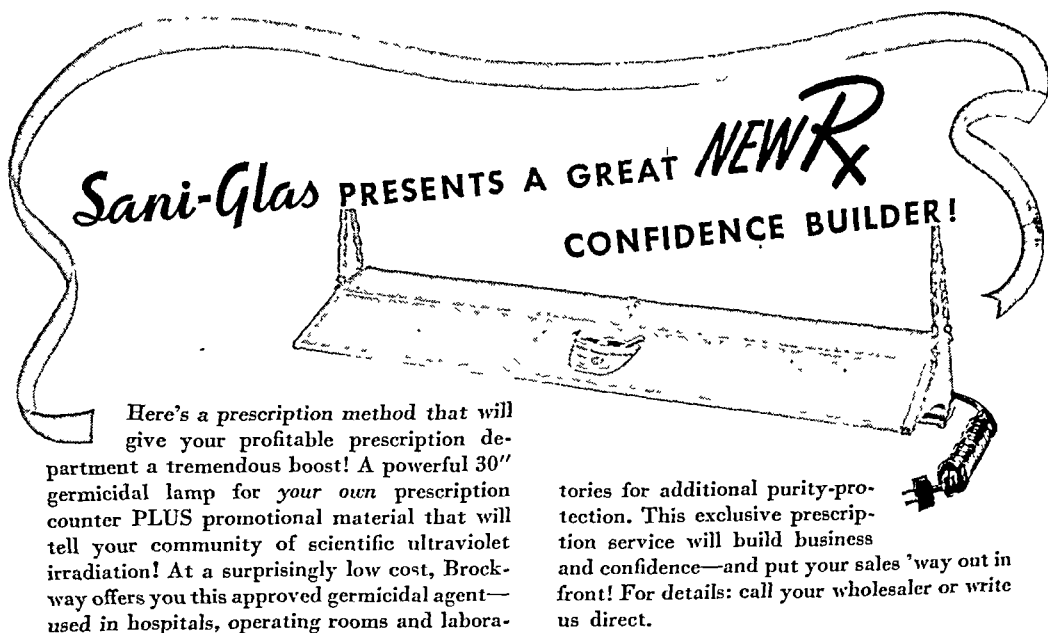
NORTHERN CALIFORNIA—Marcel Vogel, authority on fluorochemistry, was guest speaker at the March meeting. By the use of slides, Mr. Vogel showed the various regions of visible and invisible light rays. He pointed out that fluorescence is light emission lasting only as long as the luminescent system is under the influence of an exciting agent, ceasing the instant the source of energy is removed. Phosphorescence, on the other hand, is the phenomenon in which light emission may continue for some time after the removal of the source of energy. The most commonly used exciting agent employed in fluorescence is ultraviolet light.

Mr. Vogel explained that fluorescence may be applied in X-ray examinations by fluoroscope; in fluorescent microscopy to examine both bacteria and tissues; in qualitative identification of pharmaceutical, biochemical and chemical substances, in quantitative determination of some substances; and in certain clinical diagnoses. He predicted an expanding field of usefulness for this type of chemistry.

PHILADELPHIA—"The General Hospital Laboratory in the War" was the topic of discussion at the April meeting. The speaker was Dr. Herbert M. Cobe, associate professor of bacteriology and public health at Temple University Pharmacy and Dental Schools. Dr. Cobe, who recently returned from service in the Army Medical Corps, recounted his experiences in the European Theatre of Operations where he served with the University of Michigan unit working in pathology.

On April 8, 1946, the branch gave a dinner in honor of the delegates of District 2 of the National Association Boards of Pharmacy and American Association of Colleges of Pharmacy. Secretary Robert P. Fischelis, AMERICAN PHARMACEUTICAL ASSOCIATION, gave the principal address of the evening entitled "Pharmacy in the Affairs of the Nation." Dr. Madeline O. Holland, first vice-president of the branch, was toastmistress.

BALTIMORE—Harry F. Wilkens of the Owens-Illinois Glass Co. addressed the April meeting and presented the film "Now for Tomorrow." Many helpful suggestions in the modernization of a retail pharmacy were offered.



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A. PH. A. BRANCH BECOMES ACTIVE MEMBER OF CHICAGO TECHNICAL SOCIETIES COUNCIL

by ELMER H. WIRTH*

GROWING out of a series of conferences and war production clinics, the Chicago Technical Societies Council was organized on September 2, 1943. Recently the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION became the forty-seventh member society of this Council. Participation by pharmacists in this activity not only constitutes an interesting development in interprofessional cooperation, but should also be of direct interest to A. PH. A. branches and other pharmaceutical organizations in areas where similar Councils might be established.

Most of the participating groups are local chapters, sections or branches of national organizations. A few are local groups. While some cover engineering and technical fields many are devoted to sciences more or less closely related to the pharmaceutical sciences.

Among the latter are the American Chemical Society, American Institute of Chemists, Association of Vitamin Chemists, Institute of Food Technologists, Physics Club of Chicago, Society of Experimental Biology and Medicine, and Society of Illinois Bacteriologists.

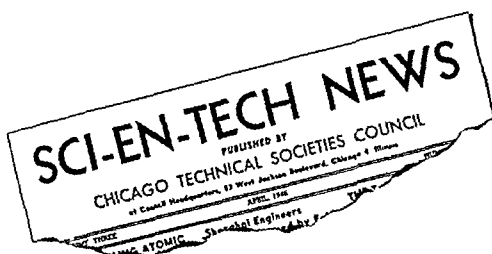
Each of the 47 societies sends two delegates (and two alternates) to the Council provided its membership exceeds one hundred, and one delegate (and alternate) if its membership is less than one hundred.

The purpose of the Council is threefold: (a) to provide a medium for cooperative action by engineering, technical and scientific societies in Chicago and vicinity on matters of mutual interest which are beyond the scope of the individual societies, or which can be performed better by cooperative action; (b) to provide means for more effective public service by the member societies, and (c) to cultivate greater appreciation by the public of the part which technology, engineering and science has contributed to human welfare.

In the brief two and one-half years of its existence, the C. T. S. Council has been outstanding in its achievements in the rendering of service to its member societies and to the public. In

1943, 1944 and 1945 it directed the first, second and third War Production Conferences, and this year on March 20, 21 and 22 sponsored the annual Chicago Production Show and Conference. In addition to more than 100 exhibits, the three days were crowded with 46 panel discussions covering every phase of science and technology, thus offering the 17,000 members of the affiliated societies and visitors a stimulating and broadening view of Chicagoland's new peacetime goals of productivity.

Once a month the Council publishes *Sci-En-Tech News*, which is mailed to each member of the affiliated societies. This 16-page, 8½ by 11 journal carries the dates, places and time of meetings, and the complete program of meetings of each affiliated society for the ensuing month. Thus, every member of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION receives a notice of the meeting and the program of his own and 46 other scientific and technical societies, often calling to his attention speakers and programs he might find of great value to himself. In addition, *Sci-En-Tech News* carries news items of scientific interest.



The Library Committee of the Council has made available to the members of its societies a complete directory of the 833 public, school, specialized, industrial and institutional libraries in Chicago. Another committee supplies data on meeting places and refectory facilities. A building committee is investigating possibilities of securing a building where the affiliated societies might be housed and where meeting places of any desired size would be available. This is a long range project and is actively related to the Chicago Civic Building Plan. The Educational Committee sponsors a number of interesting programs and public lectures each year on the role of science in our everyday lives. This year

* Chairman, Publicity Committee, Chicago Branch, AMERICAN PHARMACEUTICAL ASSOCIATION.

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Giardia Lamblia	2 acute 6 chronic		
Paratyphoid		2 chronic	
Dientameba Fragilis	2 acute		
Amebic Colitis			4 acute 2 chronic
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Administered recently to 100 patients with colon infections, 'Sulfathalidine' *phthalylsulfathiazole* was effective in the treatment of 90.* The clinician reported:

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*J.A.M.A., 129: 1080, Dec. 15, 1915

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a number of the affiliated societies are contributing lectures to a series sponsored by the Council, which are held Sunday afternoons in the auditorium of the Museum of Science and Industry.

In addition the Council publishes the *Sci-En-Tech Register*, a biographical directory of all of the members of the affiliated societies. This directory now includes the names of over 17,000 persons.

All of these services are rendered to the affiliated societies and their members without cost, the expense of the Council being met through advertising in its publications and proceeds from its annual conferences.

Membership in the Chicago Technical Societies Council brings to the members of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, not only the many advantages enumerated above but gives the Branch an added opportunity to inform the public and the members of other affiliated scientific and technical societies of the many advances in the pharmaceutical sciences and the scientific foundations which support pharmacy and are its real essence. It also offers our members an opportunity to become active in solving the many mutual problems of

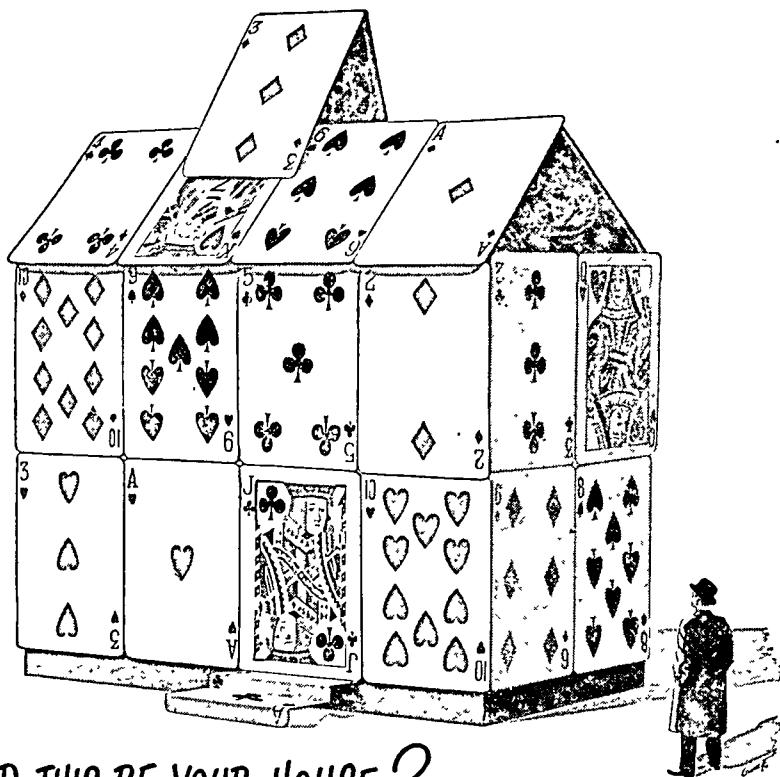
scientific societies. It permits the Branch to be identified among all of the scientific and technical societies in their service to the local, state and Federal governments, presenting an opportunity to render, in this direction, those specialized services that only pharmacy can impart.

PHARMACISTS PROMOTE BLUE CROSS IN RHODE ISLAND

Pharmacists throughout Rhode Island have joined in promoting prepaid hospitalization by making their pharmacies Blue Cross information centers during the 1946 individual and family enrollment program.

ARMY LIAISON WITH A. PH. A.

The Office of the Surgeon General of the Army has announced appointment of Maj. Bernard Aabel, MAC, as liaison officer with the Committee on War Activities and Veterans Affairs of the AMERICAN PHARMACEUTICAL ASSOCIATION. Maj. Aabel, a pharmacist, replaces Capt. Alan B. Huellmantel in the post.



COULD THIS BE YOUR HOUSE?

Now that the war's over and a lot more civilian goods are on the market, it's a big temptation to spend just about all you make, and not put anything aside.

But to fall for that temptation is plenty dangerous. It's like trying to live in the house above—a house that might come tumbling down about your ears at the first little blow of hard luck.

Right now the best possible way to keep your finances in sound shape is to save regularly—by buying *U. S. Savings Bonds through the Payroll Plan*.

These Bonds are exactly like War Bonds. Millions of Americans have found them the

safest, easiest, surest way to save. The U.S.A. protects every dollar you invest—and Uncle Sam gives you his personal guarantee that, in just ten years, you'll get *four dollars back for every three you put in!*

If you stick with the Payroll Savings Plan, you'll not only guard against rainy days, you'll *also* be storing up money for the really important things—like sending your children to college, traveling, or buying a home.

So—any way you look at it—isn't it smart to buy every single U. S. Bond you can possibly afford!

Stick with the Payroll Savings Plan!

**SAVE THE EASY WAY... BUY YOUR BONDS
THROUGH PAYROLL SAVINGS**

AMERICAN PHARMACEUTICAL ASSOCIATION

*This is an official U. S. Treasury advertisement—prepared under auspices of
Treasury Department and Advertising Council*

Journal of the

AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VII, NO. 8

AUGUST, 1946

CONSECUTIVE NO. 15

Practical Pharmacy Edition

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COVER: Dr. Robert P. Fischelis, secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, is shown (center) with two members of the U. S. delegation at the International Health Conference, where he is serving as an adviser. On the right is Surgeon General Thomas Parran of the U. S. Public Health Service, who was unanimously elected president of the Conference. Dr. James E. Paullin, on the left, is past-president of the American Medical Association. As far as could be learned, the A. Ph. A. secretary is the only pharmacist participating in the Conference, at which representatives of approximately 67 countries set up a permanent United Nations Health Organization. Surgeon General Parran includes a discussion of proposed functions of the new organization in his paper appearing on page 352.

ASAFOETIDA ON THE AIR WAVES

SOME proprietary manufacturers still agitate the air waves with high-pressure, low-level commercials. Last November we turned the editorial spotlight toward this contribution of radio advertising to bad public relations for pharmacy. We warned that it was time for effective self-censorship, before Washington watchdogs get more regulatory ideas of their own.

This view now appears to be shared by an organization in a strategic position. Namely, the Proprietary Association of America. At the 1946 meeting of this group, Executive Vice-President F. J. Cullen protested:

"The copy writer must realize that he and the manufacturer are assuming a great responsibility. . . must realize that they are not selling gadgets but medicines intended to relieve human suffering.

"After considering some of the copy that has been submitted to me during the past year, as well as copy which I have otherwise seen or heard," said Dr. Cullen, "I am sure that the person responsible for preparing it had not studied the product, its background and the reports of research covering the preparation with the same care that is necessary to enable him to produce material that will not deceive the purchaser."

All this from the official spokesman of the Proprietary Association should allay any suspicion that we have been hypercritical of advertising as such, or have measured radio promotion to the layman solely by the rigorous standards of science.

Proper drug advertising does and should catalyze the rational distribution of products, promote public health and create good will for the advertiser. Does today's radio advertising do the job?

At the proprietary meeting NBC President Trammell told the advertisers that on too many radio programs the commercial "fits into the show the way a riveting machine would fit into a symphony orchestra."

Injecting a bit of barbed humor into a discus-

sion of toiletry promotion, the Scripps-Howard advertising director suggested: "We can well afford to worry about the morals of our young people more from advertising than from strong drink, when so many of us promise the young ladies in our deodorant, perfume, soap and similar copy, that if they just use these products, what happens to them that night is something that a decent girl wouldn't talk about in public."

Later we heard comment from still another quarter. Speaking before the Section on Food, Drug and Cosmetic Law of the New York State Bar Association, Surgeon General Thomas Parran of the U. S. Public Health Service took a serious view:

"In our efforts to protect the public in the manufacture of and sale of food and drugs," he said, "we cannot help feeling a deep concern over some of the advertising techniques promoting the sale of products to the general population. In this field standards self-imposed by the industries are urgently needed. I am referring particularly to the widespread use of extravagant claims and promises held out or implied in drug advertising on the radio. At almost any hour of the day, listeners may hear announcements offering relief for a wide variety of human ills. In many of these cases no factual information is supplied to limit the hopes that may be aroused by the appeals. . . a trend that in my opinion is reaching disturbing proportions."

To clean up this situation Surgeon General Parran suggested that radio might look to the example of newspapers. Many of them have gone far toward protecting the legitimate drug advertiser by keeping a firm hand on the use of their advertising space.

At its meeting the Proprietary Association wisely had taken the first steps in this direction. It proposed to set up a joint committee between the manufacturers and radio officials, with similar committees covering newspapers and magazines. We have a right to expect that radio, and other advertising media, will meet this proposal at least halfway to control wayward proprietary advertisers.

That the manufacturers overstepping the bounds with a "slick" view of medical product advertising are a minority does in no way reduce the need for effective control. Aside from public health considerations, it is needed to protect the manufacturer who promotes his products respectably. It is needed to protect the prestige of the retail pharmacist or the physician who is frequently dragged into the commercials as an unconsulted partner in the "recommendations" offered.

Sirs:

During the war Germany's prime objective in Poland was to make serfs of those Poles who should escape their firing squads and concentration camps. Therefore they destroyed with real German accuracy all centres of Polish learning by murdering or deporting professors and scientists, by ransacking Polish laboratories and libraries, and by forbidding all university training.

Polish pharmacy shared the treatment of the other branches of scientific activities. Out of five Polish faculties of pharmacy, four lost everything including their buildings: Warsaw, Lwow, Poznan, Wilno. . . Warsaw is the most devastated city in the world, and everything that we pharmacists had there was destroyed. . . If these facilities are to be replaced we need every bit of aid we can get. . . In regard to libraries we have decided to approach editors of all scientific reviews on pharmacy with the warmest appeal to help Polish faculties of pharmacy to rebuild their destroyed collections. . .

M. B. GRABOWSKI

Pharmacists who are in a position to aid the rebuilding of Polish pharmacy in any way should address Mr. Grabowski at the Polish Pharmaceutical Association Abroad, 1 Neville St., London, S. W. 7.—THE EDITOR

FROM A PHARMACY CORPS OFFICER IN GERMANY

Sirs:

Please change my mailing address for the JOURNAL. I am now assigned to the Pharmacy and PX, 97th General Hospital, Frankfurt. The pharmacy compares with the best prescription shops in the States. I get the impression here that Germans evidently have a much higher opinion of pharmacy than Americans do.

JACK W. MCNAMARA
1st Lt., P. C.

A QUERY AND A COMPLIMENT

Sirs:

Where can I buy some pectin for use in making kaolin-pectin solution for diarrhea? Question two: What is the best vehicle that may be used to put them together? . . .

While I am writing, I'd like to say thank you for the good I am getting out of the A. Ph. A. JOURNAL each month. I really think that my JOURNALS are the best money I spend each year. You fellows really do a job for us in many ways. I wish every

legitimate pharmacist in the U. S. A. would join up.
Big Spring, Tex.

WAYNE GOUND

We are surprised that pectin N. F. is not available through your local wholesaler. Since such does appear to be the case, contact the California Fruit Growers Exchange, Products Dept., Ontario, Calif. In

combining pectin with kaolin most pharmacists seem to prefer peppermint water, rather than a more viscous type of vehicle. To make the pectin easier to disperse, mix it with a small quantity of glycerin, alcohol or simple syrup before adding the peppermint water.

Our thanks for your kind comments concerning the Association's work.—THE EDITOR

ON-THE-JOB TRAINING IN HOSPITAL PHARMACY

Sirs:

. . . I enjoy very much reading the *Practical Pharmacy Edition* of the JOURNAL, and I have been especially gratified to see the section devoted to hospital pharmacy expanded.

. . . Our department has now been approved for on-the-job training for veterans. We try to give the veteran a good training in hospital pharmacy policy and administration, as well as a great deal of actual experience in manufacturing. In addition to his regular salary, the accepted veteran receives a supplementary allowance from the government which varies from \$65 for an unmarried person to \$110 per month for one who is married.

Ann Arbor, Mich.

DON E. FRANCKE

FROM THE TROUBLED HOLY LAND

Sirs:

Binding the accumulated JOURNALS of the war years and again receiving regularly the current copies has given me so much pleasure that I want to share my satisfaction with you. . .

Those of us here who are members derive further satisfaction from noticing that the JOURNAL increases not only in the number of pages but also in its inner value.

Tel Aviv, Palestine

JOSIF G. SHOR

PROTECTIVES AGAINST SUN AND WEATHER

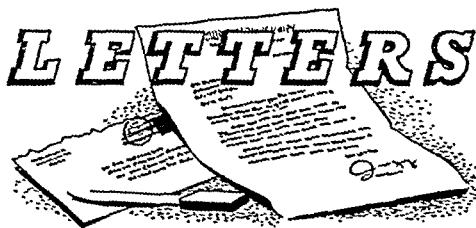
Sirs:

The sun-tan ointment developed in the A. Ph. A. laboratory for N. F. VIII is truly an elegant preparation. [See April, 1946, issue, p. 169.] Could you also give some formulas for skin protectives that may be used in winter.

Union City, N. J.

DOROTHY SPECKER

Formulas of protective ointments of this type may be found on page 377, Pharmaceutical Recipe Book III.—THE EDITOR



STRAIGHT FROM HEADQUARTERS

by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

WE have reached midyear in the activities of our ASSOCIATION, and it is time to take stock of progress made in the first six months of 1946. It is also time to project plans for the remainder of the year, taking due note of the trend of national affairs in general and shaping the affairs of pharmacy accordingly.

Since January 1, 1946, there has been a very noticeable emphasis on national affairs in the thinking of the American people. Domestic affairs, such as OPA, have occupied our thoughts to a much greater extent in recent months than have our foreign relations. Domestic affairs have always been our primary concern. But the war and its aftermath taught many of us that we cannot isolate ourselves as completely from the rest of the world as some would like, because speed of travel and communication has emphasized international dependence if this world is to go on in peace.

International Health Problems

The International Health Conference now in progress in New York under the auspices of the Economic and Social Council of the United Nations is attended by delegates from 67 nations, including members as well as nonmembers of the U. N. and observers from the governing bodies of our former enemies. This is the most representative body which has ever met to consider international problems and it shows that health is a subject of world-wide interest which calls forth cooperation while other issues remain controversial. In this Conference the representatives are mostly professional and technical leaders in public health administration and services in their own countries.

It is quite certain that the constitution or charter which this Conference will adopt as a basis for the formation of a World Health Organization will be sufficiently flexible to permit the initiation of health programs having world-wide application and significance. This means a new organization will take over the func-

tions of the Health Office of the League of Nations which has ceased to exist. It also means that such regional organizations as the Pan American Sanitary Union will be coordinated with the World Health Organization. All nations will be in a position to call upon the new organization for advice and for guidance in health matters, to the end that public health all over the world will be improved and promoted.

Just as the League of Nations dealt with international control of narcotics and standards for drugs and biological products, so the new World Health Organization will deal with them in an advisory capacity and, as far as international trade is concerned, standards and regulatory procedure will undoubtedly be devised. It is but fitting and proper that products which could not pass the requirements of any given nation for consumption by its own people should not be offered for export without a clear understanding of the substandard nature of such products and, if such products are dangerous to health, there should be acceptable ways and means for keeping them off the market. Certainly there should be clear disclosure of the quality of these products on their labels.

Pharmacy on the Home Front

On the home front it is gratifying to be able to report that the first six months of 1946 have seen an admirable improvement in the attitude of the U. S. Civil Service Commission, U. S. Army, U. S. Navy, U. S. Public Health Service and Veterans Administration toward the part that pharmacists can play in the health functions for which these Services are responsible. Not only is this gratifying from the point of view of supplying more adequate pharmaceutical service, but also because it will raise the economic status of the pharmacists in the government service and this will be reflected, in turn, in better hours and pay for pharmacists in civil life.

Relations with other professions, notably medicine, are very much on the up-grade as we enter

into the second half of 1946. The *Journal of the American Medical Association* has printed a number of editorials calling attention to problems dealing with prescribing and labeling which have shown an appreciation of the difficulties confronting pharmacists in their relations with physicians. Moreover, conferences with representatives of the Council on Pharmacy and Chemistry have become more frequent and have covered such subjects as promotion of the use of the metric system in prescribing, the new therapeutic trials program of the A.M.A., the regulation of the distribution of barbiturates and the publication of the Council Reports in our own JOURNAL.

Looking Ahead

Looking ahead we see the necessity for constructive activity in determining policies with regard to:

1. Enrollment of students of pharmacy
2. Improvement of pharmacy faculties
3. Control of outlets for the distribution of drugs
4. Control of distribution of barbiturates
5. Distribution of information on programs

for promoting better relations between state medical and pharmaceutical associations

6. Uniformity in state legislation bearing on the practice of pharmacy and the regulation of the production and distribution of drugs, devices and cosmetics
7. Sickness insurance with special reference to the extent and method of coverage of pharmaceutical services
8. Acceptance of a place in the proposed medical service units in the Army and Navy
9. Greater use of the facilities of the AMERICAN PHARMACEUTICAL ASSOCIATION in accomplishing the objectives of American pharmacy
10. The national pharmaceutical survey now in progress under the aegis of the American Council on Education.

All of these topics will come up for discussion and action at the Pittsburgh meeting of the A. PH. A. Your point of view and your constructive aid are needed in arriving at the correct solution.

R

A. M. A. COMMENTS ON THIOURACIL WARNING

THAT the medical profession is not particularly pleased with the idea of having warning notices not directed by the physician appear on prescription labels, and that A. M. A. officers realize that pharmacists are not responsible for such action in the case of thiouracil, is brought out in the following editorial from the *Journal of the American Medical Association* (131: 524, 1946):

"The Food and Drug Administration has announced that pharmacists who dispense thiouracil on prescription must place a warning on the label cautioning the patient that this drug may impair resistance to infection and suggesting that the patient should report to his physician immediately at the first sign of fever, sore throat or other symptoms of a cold. The Federal Food, Drug and Cosmetic Act exempts drugs dispensed on a written prescription of a physician from bearing a statement of the quantity of contents and a statement of the active ingredients on the label. The law does not, however, exempt such drugs from the requirement that the labeling bear adequate directions for use or warnings necessary for the protection of users.

"Thiouracil is a dangerous drug and may cause drug fever, skin rashes, leukopenia and agranulocytosis. The most important step in treatment of the complications of thiouracil is early recognition of the complications and prompt institution of appropriate therapy.

"The Food and Drug Administration is reported to have consulted with experts experienced in thiouracil treatment and to have stated that the consensus of these experts favored the placing of a warning to the patient on the label of the drug when dispensed on prescription. This warning apparently is intended to supplement and reinforce warnings given orally by the physician. Physicians should recognize that the pharmacist is required by federal law to place this warning on the label of the drug, even though it has been dispensed on written prescription. This requirement on the part of the pharmacist may disturb normal pharmacist-physician relationship unless the physician is aware of the ruling. Presumably the ruling is intended to prevent, as much as possible, needless deaths from this useful but potentially dangerous drug."

PRESENT STATUS OF TYROTHRIN FOR TOPICAL USE*

BECAUSE tyrothricin appeared to offer promise as a therapeutic improvement over the sulfonamides and certain other antibacterial agents for topical application, and as a means of avoiding dangers possibly inherent in the indiscriminate use of sulfonamides and penicillin, the desirability of utilizing this agent for topical antisepsis was investigated.

Tyrothricin is a mixture of two substances, gramicidin and tyrocidine. That it exerts an antibacterial action against a large number of organisms is well established, although no study defining the exact extent of the bacterial spectrum for tyrothricin has as yet been reported. Unfortunately, most of the published reports concern a limited group of organisms and none presents a comprehensive review of the problem. The data obtained by different investigators are not always comparable since the medium used and the cultural conditions under which the tests were performed vary widely.

In cooperation with Dubos, a systematic survey of the effect of gramicidin and tyrothricin on a large variety of microbial species under standardized conditions was undertaken.¹

The tests were carried out in a medium containing 1% serum albumin. It is well known that most antiseptics are inhibited in their action against bacteria by proteins in general and by serum proteins in particular. It was considered, therefore, that an inhibition test carried out in a medium containing a large amount of

AS COMPLEMENT TO SYSTEMIC ANTIBIOTICS, DRUG PRESENTS ADVANTAGES OF WIDE RANGE OF EFFECTIVENESS LOCALLY, GOOD STABILITY AND SAFETY

serum albumin would resemble more closely conditions prevailing in exudates than would be the case in a medium free of proteins.

Gramicidin is unaffected in its antibacterial action by any concentration of serum albumin. In fact, as observed by Dubos, its activity seems to be appreciably increased in this medium. On the contrary, tyrocidine, the other component of tyrothricin, is, like other antiseptics, largely inhibited by albumin.

Although this survey is far from complete, the results at the present time permit a few statements which are summarized in Table I. The data presented deal with gramicidin. The comparative figures for tyrothricin would be two to five times larger. Tyrothricin contains approximately 20 to 25% gramicidin, and some 60% tyrocidine. Although the latter substance also exhibits marked antibacterial activity *in vitro*, most of this activity is lost in the presence of animal tissues; this is probably due to the fact, already mentioned, that tyrocidine is inhibited by serum proteins. Most of the *in vivo* activity of tyrothricin therefore is due to its gramicidin content.

Furthermore, the data presented in the table refer to bacteriostatic levels. Gramicidin does not

* Condensed from a paper by John Henderson, M.D., appearing originally in the *Scientific Edition of THIS JOURNAL*, 35 141, 1946 Received from the Department of Clinical Research, Johnson and Johnson, New Brunswick, N. J.



kill the spores of aerobic or anaerobic sporulating bacilli, but only inhibits their multiplication. In the case of a few nonsporulating species (group D streptococci in particular) the effect of gramicidin is essentially bacteriostatic. In general, however, the bactericidal level is very close to the bacteriostatic level and this is particularly true in the case of the pathogenic species tested.

An interesting comparison of the relative speed of tyrothricin and penicillin in killing a standard strain of *Staphylococcus aureus* was made by Crowe, Fisher, Ward and Foley.² A series of pour plates were made at varying intervals of time after inoculating with one drop of a twenty-four hour *Staphylococcus* culture, a 5-cc. broth tube containing tyrothricin in a concentration of 1:20,000. Those poured within two to three minutes after inoculation showed a marked reduction in the number of organisms, and the plate poured at the end of one hour was sterile. The penicillin plates, on the other hand, showed no decrease in the number of organisms after one hour. A sharp reduction, however, occurred between the third and sixth hours and the twenty-four hour plate was sterile.

The antibacterial effect of tyrothricin under clinical conditions has been extensively investigated. Rammelkamp³ used tyrothricin in the treatment of 58 localized infections and demonstrated that when applied to chronic ulcers of the extremities, tyrothricin resulted in sterilization and healing if the local infection was caused by *Streptococcus hemolyticus*, *Staphylococcus aureus* or *Streptococcus faecalis*. He also noted encouraging results upon application of this substance to mastoid cavities following mastoidectomies. *Staphylococcic empyema* and *pneumococcic empyema* responded poorly, whereas in one patient with streptococcic empyema the response was dramatic.

Herrell⁴ believes that the best results are obtained in cases of ulcers infected with *Streptococcus*



Photos, Sharp & Dohme Laboratories

pyogenes, and that the results against *Staphylococcus aureus* are not quite so satisfactory. In one series of 93 cases suffering from infected ulcers and wounds, reported from the Mayo Clinic, failures occurred in 17.⁴ The response in more than half of the remaining cases could be considered good or excellent. Francis⁵ reports a

TABLE I.—PARTIAL LIST OF ORGANISMS INHIBITED BY GRAMICIDIN

Organism	Concentration of Gramicidin Required to Inhibit Growth (γ/Cc. of Broth Containing 1% Serum Albumin)
<i>Diplococcus pneumoniae</i>	0.005- 0.02
<i>Streptococcus hemolyticus</i> (groups A, B, C)	0.001- 0.05
<i>Streptococcus hemolyticus</i> (group D) including <i>Enterococcus</i> and <i>Streptococcus faecalis</i>	0.05 - 0.2
<i>Streptococcus anaerobius</i>	0.01 - 0.02
<i>Lactobacillus</i>	0.05 - 0.5
<i>Staphylococcus aureus</i>	0.5 - 5.0
<i>Corynebacterium diphtheriae</i> and diphtheroid bacilli	0.05 - 0.5
<i>Mycobacterium tuberculosis</i>	0.02 - 0.05
<i>Bacillus anthracis</i>	5.0 -20.0
Saprophytic aerobic sporulating bacilli	0.1 - 1.0
<i>Clostridium tetani</i> and other anaerobic sporulating bacilli	0.02 - 0.5
<i>Neisseria gonorrhoeae</i>	0.5 -10.0
<i>Neisseria meningitidis</i>	0.5 -10.0
Gram-negative bacilli	No inhibition

TO PRODUCE TYROTHRIN, liquid bouillon is inoculated with *Bacillus brevis*, a soil organism, then incubated in tray fermenters like those shown at the left. When the culture has been harvested, tyrothricin is precipitated out, purified and dried. Some of the crude, dried product can be seen on the tray, above. After it has been finely powdered, the drug must be defatted with ether, processed further, standardized, and sterilized by candle filtering.

case of a sulfonamide-resistant infection with *Streptococcus pyogenes* which responded satisfactorily to local applications of tyrothricin, and Rankin⁶ reported excellent results from the use of tyrothricin in five or six cases of chronic ulcer.

Kvale, Barker and Herrell,⁷ as the result of an extensive study of ulcers of both ischemic and stasis origin,* believe that tyrothricin is particularly valuable and were impressed by its low toxic effect on the extremely delicate tissues concerned

Other Clinical Results

The Russian investigators, Gause and Brazhnikova,⁸ reported their clinical results in a series of 573 cases with gramicidin S, a substance which is similar to tyrothricin but is less highly refined and less active. This series included infected gunshot wounds, empyema and osteomyelitis. Application of gramicidin S led to rapid disappearance of bacteria from the wounds, and these workers thought that the substance was particularly effective in preparing these wounds for subsequent surgical treatment.

Tyrothricin has proved useful in the preparation of infected ulcers and wounds for skin grafting and frequently facilitates the eradication of stubborn bacterial infections, thereby hastening the possibility of early grafting.⁹

The use of tyrothricin in the treatment of diseases of the nose and throat has been reported by Schoenbach, Enders and Mueller,¹⁰ who observed some partial effect upon streptococcus carriers, but not complete sterilization. Lindsay and Judd¹¹ investigated in considerable detail the possible value of tyrothricin in the treatment of chronic infections of the upper part of the respiratory tract, and for elimination of pathogenic bacteria from the tonsils of carriers. It was not evident that the duration of the infection was shortened by the use of tyrothricin, nor did the substance appear to alleviate the symptoms. Likewise, there was little evidence that improvement following the use of tyrothricin for chronic infection of the sinuses was any more rapid than customarily follows conservative treatment.

On the other hand, Crowe and his associates¹² used tyrothricin locally in the treatment of acute otitis media, acute and chronic mastoiditis, and acute and chronic sinusitis, for over two years and felt that they obtained better results in many cases than with other forms of treatment.

Tyrothricin has also been used for the treatment of such miscellaneous conditions as keratoconjunctivitis, pneumococcal conjunctivitis,¹²

treatment of Gram-positive bladder infections by instillation, and certain cases of pyodermitis.³ Piper¹³ has found the material effective in treatment of coccal and certain mixed infections of the vagina, but it is doubtful that it is clinically effective against trichomoniasis.

The remarkable effects of tyrothricin in the treatment of bovine mastitis have been applied on a very large scale in the field and should be mentioned, since this work, which has been presented in great detail by Little, Dubos and Hotchkiss,¹⁴⁻¹⁷ was largely responsible for attracting attention to tyrothricin for use in human medical fields.

The optimal therapeutic concentration of tyrothricin, taking into consideration the local tissue toxicity and the maximal antibacterial effect, as originally demonstrated by Herrell and Heilman,^{9, 18-20} is in the neighborhood of 500 micrograms per cubic centimeter. This concentration is widely used today for therapeutic application, and was adopted as the basis for calculating the amount to be impregnated per unit area of gauze in the manufacture of adhesive compress dressings.

Gauze is impregnated with tyrothricin in a manner such that, as the gauze becomes wetted, the tyrothricin automatically forms a solution in the tissue fluids of approximately optimal concentration. That it exerts well-marked bacteriostatic and bactericidal effects is readily demonstrable.*

Bacterial Fastness

Some question may be entertained concerning the development of tyrothricin-fast strains of bacteria as this agent comes to be used by large masses of the population. Such a phenomenon is, of course, theoretically possible, as bacterial fastness may be developed under certain conditions against almost any agent. In the case of tyrothricin, it is unlikely that such a phenomenon could be of practical significance. The development of fastness to tyrothricin by a chance organism contaminating a specific wound would be a matter of purely local concern in the treatment of a particular wound. This is true because there would be little possibility of such a tyrothricin-fast organism being disseminated and becoming established as a tyrothricin-fast strain among the population. Even though a given organism did become tyrothricin-fast, and subsequently caused a systemic infection, the fact would be of little material significance since some agent would of necessity be used because tyro-

* Ischemic refers to local deficiency of blood usually due to contraction of a blood vessel as compared with stoppage of the blood, or stasis.

* For data, see original paper in the *Scientific Edition of THIS JOURNAL*, 35: 141, 1946.

thricin cannot be used systemically. For this reason, tyrothricin is unique in that the theoretical possibility of the development of bacterial fastness to this compound is of little epidemiologic significance.

Many antibiotic agents have proved of no practical use because of toxicity, even though some have exhibited a high degree of antibacterial activity. It is therefore of importance to consider tyrothricin from the standpoint of possible toxic manifestations before reaching a final conclusion regarding this substance.

Low Tissue Toxicity

That tyrothricin possesses a remarkably low local tissue toxicity was first demonstrated by the tissue culture studies of Herrell and Heilman.¹⁸⁻²⁰

Dubos and Hotchkiss,²² in studying the components of tyrothricin, reported that high concentrations of gramicidin did not affect the oxygen uptake of polymorphonuclear cells, whereas similar concentrations of tyrocidine caused cessation of cell respiration and disintegration of white cells. Subsequent studies by Heilman and Herrell^{19, 20} showed that gramicidin, on the other hand, was more toxic than tyrocidine and that the cytotoxicity of tyrothricin was largely due to its content of gramicidin.

It should be emphasized, however, that when the cytotoxicity of gramicidin or tyrocidine is compared with that of other germicides commonly used for local application, such as zephiran, merthiolate or phemerol, these components of tyrothricin are found to be considerably less toxic under the same conditions.²⁰

The acute toxicity of tyrothricin and its fractions for animals has been reported by Robinson and Molitor.²³ They found that the daily parenteral administration to dogs of 2 mg. of gramicidin or tyrothricin per kilogram of body weight produced death in from two to eight days, but these substances were not toxic on oral administration. Gramicidin does not appear to be inactivated in the stomach, but the presence in the intestines of large amounts of Gram-negative organisms causes inhibition. There is little evidence that any therapeutic effect may be obtained by oral administration, although under experimental conditions, with the adequate feeding of gramicidin, a definite effect on the Gram-positive flora can be recognized.

The most striking toxic manifestation of tyrothricin is its hemolytic effect upon the red corpuscles when the material is injected experimentally into animals by the intravenous route.

This phenomenon constitutes the principal reason that tyrothricin cannot be used parenterally; however, it is of no moment when tyrothricin is used topically or in the treatment of body cavities not directly connected with the circulatory system, or in the treatment of open wounds.

Even in the latter case, should active bleeding be present, no absorption of the tyrothricin would be expected, since whatever tyrothricin were present would be washed away by the flow of blood before any absorption into the blood stream could occur; in any event, the amounts of tyrothricin present would be too small to exert any untoward effect.

Of importance is the question of possible sensitization to this substance. In reviewing the literature pertaining to tyrothricin, one is impressed with the paucity of reports concerning untoward manifestations resulting from the topical application of this material, in therapeutic concentrations, either to the body-integument or various physiologic or artificial cavities.

Sensitivity Very Rare

In so far as we have been able to ascertain, no instance of tyrothricin sensitivity has been reported, although the compound now has been used in a wide variety of conditions and applied by a number of different methods and vehicles over a period of several years. It is interesting to note that during the last two years tyrothricin has been produced in ever-increasing quantities and is being dispensed widely for a variety of purposes.

Grolnick²⁴ has exhaustively studied the question of whether tyrothricin was capable of causing sensitization. In 171 subjects on whom a solution of tyrothricin containing 1, 2, 5 or 10 mg. per cc. had been applied by patch test for a two-day period, there was no evidence of primary irritation. Twenty-five subjects who had been treated by a seven-day application with a solution containing 10 mg. per cc. did not become sensitized to tyrothricin.

Finally, sensitivity to tyrothricin failed to develop in 41 subjects who had been given repeated applications with adhesive compresses impregnated with tyrothricin, over a prolonged period.

Keefer²⁵ found no positive reactors in 105 patch tests, and Cooke and Finkelstein²⁶ tested a total of 82 subjects without observing evidence of sensitization.

It may be concluded with reasonable safety, therefore, that although sensitivity is not uncommon in the case of the sulfonamides, penicillin and certain antiseptics, tyrothricin has not pro-

duced sensitization of the skin under conditions of the experimental studies so far carried out. If it occurs clinically, experience would seem to be sufficiently large to warrant the conclusion that it must be very rare. However, were sensitivity to occur occasionally, this probably could not be considered of such serious consequences as would pertain in the case of the sulfonamides or penicillin, since tyrothricin is never administered systemically and sensitization would, therefore, be merely a matter of local contact and of no permanent significance.

Summary

Tyrothricin is useful against a wide range of organisms when applied topically, and in this respect its use should be considered complementary to that of the systemic antibiotics.

It possesses advantages for topical use, over certain other antibacterial agents including the sulfonamides and penicillin, because of its stability, a wide spectrum of antibacterial activity, maintenance of potency in presence of blood and serum, low tissue toxicity, and lack of sensitizing properties.

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A. PH. A. ISSUES ANALYSIS OF PRESENT BARBITURATE LAWS

A comprehensive analysis of present barbiturate regulation is presented by Dr Robert P. Fischelis, secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, in the *Scientific Edition* of THIS JOURNAL (35: 193, 1946). The report represents part of the study being made under the auspices of A. PH. A.'s Committee on Legislation. A model state barbiturate bill also has been drafted by the Committee, and will be presented for approval at the A. PH. A. Convention.

Although all but 12 states now have some form of control over barbiturates, the study shows, there is a wide disparity in effectiveness and coverage. States that have no laws or regulations on the subject are Arizona, Idaho, Illinois, Iowa, Kentucky, Massachusetts, New Mexico, Ohio, South Dakota, Texas, Wisconsin and Wyoming.

All but one of the 35 laws now in effect restrict the sale of barbiturates, or barbiturates and other drugs, to prescriptions. In New Hampshire, an exception, the general law on potent drugs limits the sale of all such drugs to a registered pharmacist or assistant pharmacist.

Fifteen of these laws make no reference to the refilling of prescriptions, with restrictions varying in other states up to a blanket prohibition on refills found in five laws.

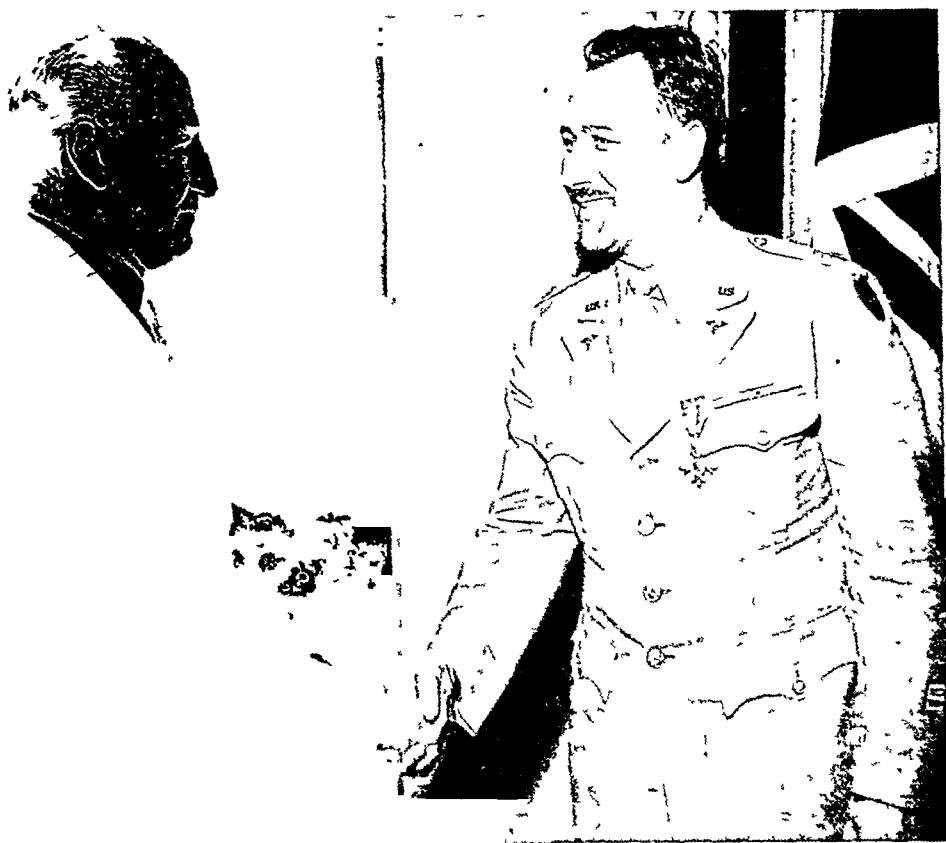
Penalties for violations also serve to illustrate the wide range of legal control in different parts of the country. Fines extend from a minimum of \$10 to a maximum of \$10,000, and prison terms vary from a minimum of ninety days to a maximum of five years.

The A. PH. A. study classifies existing laws in detail as regards type, scope, restriction to prescriptions, renewals, regulation of sales by manufacturers and wholesale druggists, labeling, exempt preparations, and dispensing by physicians, dentists and veterinarians.

AAAS PHARMACY SUBSECTION

The Subsection on Pharmacy of the American Association for the Advancement of Science will present a program at the organization's meeting in Boston, December 26-31. Those wishing to present a paper in the fields of pharmacy, pharmaceutical chemistry, pharmacology or pharmacognosy should submit the title of the paper at once to the Subsection chairman, Dr. Glenn L. Jenkins, Purdue University School of Pharmacy, Lafayette, Ind.

BRITISH HONOR U. S. PHARMACIST



THE BRITISH AMBASSADOR, Lord Inverchapel, congratulates Maj. Woodrow C. Herbert of the Pharmacy Corps following presentation of the Order of the British Empire.

THE "Most Excellent Order of the British Empire" was bestowed upon Maj. Woodrow C. Herbert of the Army Pharmacy Corps at ceremonies in Washington, D. C., on July 11. Lord Inverchapel, the Ambassador, presented the decoration in behalf of King George VI at the British Embassy, citing Maj. Herbert as a "tireless worker who laboured unceasingly in connection with supply of medical stores for relief of the civil population" in Greece. "It was largely due to his untiring efforts that the issue and distribution of medical supplies to the civil hospitals, both permanent and improvised, was maintained during the armed rebellion. . . Working extremely long hours day in and day out, he set an outstanding example to both military and civil personnel of devotion to duty without thought of self. He was often under fire during the hostilities, and throughout showed complete disregard for his personal safety."

The pharmacist thus honored had been selected in 1944 to serve as medical supply officer with an

organization formed to take supplies to beleaguered Greece. The British in Egypt had laid plans for the project, which was originally to have included Albania and Yugoslavia as well. Since part of the supplies came from the United States, it was decided that a small contingent of American specialists should participate in the mission.

In October, 1944, the supply forces left Egypt for Greece, with Maj. Herbert in complete charge of the medical supply program for the civilian population. Conditions were chaotic, with a minimum of qualified personnel and equipment. When distribution bogged down, Maj. Herbert commandeered every available type of transportation—burro, truck, train and boat—to move medical stores from the 12 ports receiving them.

With supplies trickling in from other organizations, such as Greek War Relief and the Greek, Swiss and American Red Cross organizations, it soon became apparent that distribution was

neither equitable nor well coordinated. Maj. Herbert therefore took the lead in establishing the Joint Medical Supply Committee of Greece, which coordinated all efforts to bring relief to the Greek people. As an outgrowth of this, he set up a Joint Medical Supply Depot as a central point of distribution.

When civil war came to Greece, Maj. Herbert and his associates in the medical supply program often worked under constant fire fifteen to eighteen hours a day to bring aid to the ill and wounded.

After the civil war, in April, 1945, Maj. Herbert was forced to return to America because of ill health. Civilian medical supply work in Greece was continued by an American pharmacist with UNRRA, Vincent Norelli.

Before entering the Army, Maj. Herbert had practiced as a retail pharmacist in Salt Lake City, Utah. In 1940 he was commissioned in the Medical Administrative Corps., later transferring

to the newly established Pharmacy Corps. Originally a post exchange officer, he soon entered medical supply. After serving in the Army Laboratory in New York, he went to the Medical Field Service School at Carlisle Barracks, Pa. When LaGarde General Hospital in New Orleans was first opened, Maj. Herbert was on hand to inaugurate the medical supply service. From there he went to the Medical Section of the Utah ASF Depot at Ogden. August, 1943, found Maj. Herbert overseas to take charge of all medical supply work in Central Africa.

His later achievements in Greece won him the Order of the British Empire, with rank of Honorary Member, climaxing this Army career of a pharmacist. Maj. Herbert, who is a member of A. P. H. A., now serves as director of the Stock Control Division of the St. Louis Medical Depot, nerve center for the distribution of drugs and medical supplies to American forces throughout the world.



FIRST PROJECTS APPROVED FOR SURVEY

PROJECTS relating to the testing of the abilities and achievements of pharmacy students and to qualifications for the faculties of pharmacy schools have been recommended by the Committee on Pharmaceutical Survey to receive first attention in the nation-wide study of pharmaceutical education, practices and services announced in the July issue of the JOURNAL.

The survey is being conducted by the American Council on Education, which announces the following Committee on Pharmaceutical Survey to serve as the advisory group:

George D. Beal, assistant director, Mellon Institute; W. Paul Briggs, Veterans Administration; W. W. Charters, *chairman*, director, The Research Service, Stephens College; B. V. Christensen, dean, College of Pharmacy, Ohio State University; Donald A. Clarke, apothecary-in-chief, The Society of the New York Hospitals; George V. Doerr, McKesson and Robbins, Inc.; A. G. DuMez, *vice-chairman*, dean, School of Pharmacy, University of Maryland; Carson P. Frailey, executive vice-president, American Drug Manufacturers Association; H. Evert Kendig, dean, School of Pharmacy, Temple University; Frank W. Moudry, secretary, Minnesota State Board of Pharmacy; Edward S. Rogers, *chairman* of the Board, Sterling Drug, Inc.; Robert

L. Swain, editor, *Drug Topics*; Frank O. Taylor, Parke, Davis & Company; John A. Stevenson, president, The Penn Mutual Life Insurance Company; Charles R. Walgreen, Jr., president, Walgreen Drug Company.

Also in attendance at the meeting were:

George F. Zook, president, American Council on Education; A. J. Brumbaugh, vice-president, American Council on Education; E. L. Newcomb, secretary, American Foundation for Pharmaceutical Education; Edward C. Elliott, director, The Pharmaceutical Survey; Alice L. Richards, executive assistant to the director.

It is expected that this Committee will create a number of consulting subcommittees representing various interests concerned with the survey.

In addition to recommending initial projects at its meeting on June 26, the Committee considered detailed plans for the three-year study, presented by the director, Dr. E. C. Elliott. Other projects approved include development of standards for the selection and admission of pharmacy students, and for the guidance of students; a spot analysis of present-day prescriptions to determine the knowledge required by the pharmacist for compounding; and an analysis of the activities engaged in by pharmacists—professional, commercial and civic.

Laxatives

by MELVIN W. GREEN

CHAIRMAN, COMMITTEE ON PHARMACEUTICAL RECIPE BOOK

THE pharmacist dispenses more laxatives annually than any other type of household remedy. In a typical year, 1933, it was estimated that over 20 million dollars worth of these drugs was purchased in the United States. Because laxatives are so widely used it is important that the pharmacist be well informed concerning their use, mode of action and limitations.

For a very long time it has been the popular belief that a bowel movement daily is essential to good health. Most physicians, on the contrary, believe the normal interval between movements varies considerably for different persons. Of the thousands of persons attempting to establish a daily cycle with the use of laxatives, many obviously do not actually know what their own optimum schedule is.

The use of laxatives often contributes to irregular bowel movements since a cathartic may virtually empty the bowel and the patient can therefore have no movement the following day, a fact which he often attributes to constipation. It is not so much frequency of bowel movement, but character of the stool and ease of defecation which determine constipation.

The fact that laxatives must be used with caution is reflected in the labeling requirements of the Food and Drug Administration. The danger lies largely in the abuse of laxatives during periods of abdominal inflammation, particularly appendicitis. It is significant that in one study of a series of cases of appendicitis, 1 out of 96 patients with acute appendicitis died if no purgative were taken, 1 out of 11 died if a purgative had been taken, and 1 out of 4 died if the patient had taken laxatives repeatedly [A. E. Smith, *Hygieia*, 23: 415, 1945].

Although the use of laxatives has undoubtedly

MISUSE OF LAXATIVES IS DUE TO MISCONCEPTION OF CONSTIPATION.. LIMITATIONS, AS WELL AS MODE OF ACTION AND RATIONALE, SHOULD BE WELL UNDERSTOOD IN DISPENSING THESE WIDELY USED REMEDIES

been abused and their use is often clearly an economic waste not without danger, they do have well-defined uses in the practice of medicine. Some of these uses are as follows:

1. In cases of drug or food poisoning, the saline cathartics are especially useful in clearing the gastrointestinal tract of the poison.
2. It is often essential to administer cathartics after anthelmintics to free the body of both the anthelmintic and the worm.
3. In edema, the saline cathartics are often of value in eliminating water more rapidly.
4. Castor oil in conjunction with quinine and pituitrin is sometimes prescribed to induce labor.
5. Diagnosed constipation.

Many attempts to classify cathartic drugs have been made, some schemes breaking down according to the type of substances, others depending on the character of the physiological response. Differentiation into laxatives, purgatives and cathartics is apt to be of more academic interest than practical application. The author finds the following scheme of classification to be helpful:

A. BULK-INCREASING LAXATIVES

1. Cellulose and non-digestible polysaccharides (mucilages).
2. Saline cathartics.
3. Liquid petrolatum.

B. IRRITANT CATHARTICS

1. Vegetable acids and sulfur.
2. Castor oil.
3. Anthraquinone cathartics and phenolphthalein.
4. Drastic purgatives.
5. Mercurial purgatives.

Bulk-Producing Laxatives

Everyone is familiar with the fact that cellulose in the form of the crude fiber, etc., of vegetables and fruit produces catharsis by virtue of its bulkiness. Somewhat analogous substances, certain mucilages, have been used for this same purpose. These mucilages, when moistened, form gels with great bulk which extends the gut sufficiently to encourage peristalsis. The advantage of these substances is the relative freedom from irritation.

It is important that the user be instructed to add sufficient water or milk to these mucilages so that they are completely gelled before administration. Considerable damage could be done by the dry powder absorbing water and swelling while in the esophagus.

Drugs in this class are agar, psyllium seeds, karaya gum, and possibly methyl cellulose.

LIQUID PETROLATUM has been used for many decades as an emollient cathartic. It lubricates the feces and prevents too much dehydration. At first believed to be the safest of all laxatives, it has since been shown to be disadvantageous because of its interference with the absorption of fat-soluble vitamins from the intestine. This has been shown to be true for vitamins A and D, and it probably is true for vitamin K also. Although not as thoroughly studied as it might be, there is considerable evidence that the continuous use of "mineral oil" is not in the interest of good nutrition.

Recently Sodeman and Stuart [*Ann. Internal Med.*, 24: 241, 1946] have studied 264 lipoid pneumonia cases resulting from liquid petrolatum between 1927 and 1942. It is of interest that nearly half of the adult cases could be attributed to the use of mineral oil as a laxative.

Liquid petrolatum is useful in cases where soft stools and the avoidance of straining are necessary, such as in hypertension, hernia, embolisms in the brain area, and hemorrhoids.

SALINE LAXATIVES, like sodium sulfate and magnesium sulfate, increase bulk by their ability to increase the water content of the intestines, osmotically. In fact, a study of the mode of action of this group of drugs is an excellent lesson in the principles of osmotic behavior.

If a hypertonic solution of sodium chloride is in contact with the intestine it does not remain hypertonic long. The intestine, being permeable to both sodium ions and chloride ions, soon absorbs enough of the salt to render the solution isotonic and no purging takes place. If a solution of sodium sulfate is placed in the gut, a different condition exists. The intestine is permeable to sodium ions but not to sulfate ions. The sulfate ions (and enough positive ions to balance it) stay behind creating a hypertonic state. This can be alleviated only by the introduction of water from the blood and other tissues until the fluid inside the intestine is again isotonic. The increased pressure of this extra water, by virtue of its bulk, brings about catharsis. This is what happens when the physician prescribes a saline cathartic during edema; the water from the edematous area enters the gut to render its contents isotonic.

Any simple inorganic compound can behave as a saline cathartic providing the intestine is impermeable to one or more of its ions. Compounds like magnesium sulfate, in which neither ion can penetrate the intestine in appreciable amounts, are very effective, although not necessarily more so than compounds in which only one ion is not absorbed.

The frequent use of salines is naturally inadvisable when it increases the possibility of dehydration.

Irritant Cathartics

All drugs in this category are irritating to the mucosa of the intestine and the irritation increases the peristaltic activity, thus encouraging defecation. Some of the drugs, like those of the anthraquinone group, confine most of their irritating action to the colon, while others like the drastic resinous purgatives, irritate the entire intestinal tract.

VEGETABLE LAXATIVES AND SULFUR. Many organic acids contained in such fruits as figs and prunes are mild laxatives. Recently Gold and co-workers have shown that fumaric acid and its salts are excellent mild laxatives without the nephrotoxic action of tartrates [*THIS JOURNAL, Sci. Ed.*, 32: 173, 1943].

Sulfur is inert, but in the intestinal tract

bacteria produce a small quantity of hydrogen sulfide which is a mild irritant.

CASTOR OIL. Castor oil of good quality is nonirritant until hydrolysis takes place in the intestinal tract, liberating ricinoleic acid, an hydroxy fatty acid, which is irritating and causes peristalsis. If free ricinoleic acid is present in the original oil, irritation of the stomach causes nausea and vomiting. In the days before good refining methods, castor oil was the bane of children because of the nausea from this cause.

ANTHRAQUINONE PURGATIVES. Senna, rhubarb and cascara owe their activity to anthraquinone compounds such as emodin chrysophanic acid and isoemodin. These compounds, individually and in the free state, are not very active due to absorption and the need for their synergistic combination:

The drugs in this group can cause catharsis only after a considerable time because they act largely on the colon and a number of hours are required for their arrival at that point. As a rule they are administered at night for action the following morning.

Cascara sagrada is the mildest of these drugs, has a mild tonic action to the gut and does not leave the gut in such a state of disequilibrium after its action as some irritant cathartics.

Senna causes considerable more griping and is usually prescribed with carminatives and other adjuvants in an attempt to lessen this effect.

Rhubarb contains tannin which often leads to constipation afterward. This is alleged to be a virtue in treating diarrhea, *i. e.*, the cathartic eliminates the poison after which the tannin stops the diarrhea.

Because of the griping effects of most of the drugs in this group, drugs like atropine (and belladonna) and strychnine have been added as "correctives." The remnants of this belief still are evidenced in some of the National Formulary pills. This use is irrational, for the "correctives" act in a comparatively short time, while the cathartics often remain inactive for eight hours or more.

PHENOLPHTHALEIN. Phenolphthalein behaves very much like the anthraquinone purgatives. It is insoluble in the acid contents of the stomach, but in the alkalinity of the intestine and aided by the bile, it dissolves. Only about 15% of a therapeutic dose is absorbed and it is excreted largely by the kidneys in a combined form. A portion is excreted in the bile. The compound is so free from toxicity that Fantus was unable to determine a toxic dose in animals.

In hypersensitive individuals, the drug may lead to excessive purgation, colic, palpitation,

labored respiration, and possibly collapse. Very frequently a skin rash develops in persons not unduly sensitive to the drug otherwise. The skin lesions often leave persistent pigmented areas which exist for months or even years.

MERCUROUS CHLORIDE (calomel). It has not been so many decades ago when medicine could not be practiced without calomel, a drug which is considered dangerous today. The great virtue of calomel was thought to reside in its ability to stimulate bile secretion by the liver. The green color of the stools was considered evidence of this. Modern experimentation has shown this conception to be false. The calomel is antiseptic in action and thus prevents the destruction of the bile pigment, biliverdin, and further, the cathartic action propels the biliverdin forward before it can change in the normal fashion to bilirubin. The net result is a greenish stool.

Mercurous chloride is so insoluble that too few ions are present to be active until, in the intestinal environment, a small amount is converted to more soluble forms, probably the oxide. The mercury ion irritates the musculature, and brings about increased peristalsis. Should this fail to take place, enough mercury may be absorbed to prove toxic. Consequently a saline cathartic is given at the finish of the "course" of calomel. We are faced with the paradox of a cathartic used to eliminate a cathartic!

IRRITANT RESINS. For a number of decades, the resinous drugs, jalap, podophyllum, ipomea and colocynth have been used as drastic purgatives. These potent resins are irritant to the entire intestinal tract. Usually they pass through the intestine so rapidly that they have no opportunity to do much harm, but in the presence of mechanical bowel obstruction or if for any other reason their exit is delayed, the inflammation may cause serious damage.

Recently advantage has been taken of the irritant quality of podophyllin (resin of podophyllum) for the removal of venereal warts.

Irritant cathartics are undesirable at any time, but particularly those acting on the colon must be omitted during pregnancy as they are capable of causing miscarriage.

To recapitulate, cathartics fall into several classes with different modes of action. A better knowledge of their action shows them to be abused frequently because of failure to appreciate their limitations. Pharmacists could do a public service by keeping their patrons informed and by encouraging them to see physicians to have their constipation "confirmed" by a correct diagnosis.

FIRST COURT TEST...

FDA RETAIL JURISDICTION UPHeld

THE Food and Drug Administration's contention that pharmacists must comply with the Federal legislation when *dispensing drugs obtained through interstate commerce* has been upheld by a District Court decision in Columbus, Ga. The case has special significance since it is the first charge of misbranding on an over-the-counter sale that has been contested. A number of retail pharmacists were fined previously for a similar offense but did not contest the charge.

In brief the court decision holds that Congress intended that the Act should prevent misbranding by the pharmacist while a product (received in interstate commerce) is being held for sale, and that such regulation is Constitutional. It gives additional legal support to FDA requirements that pharmacists observe the prescription legend and dispense over-the-counter products with adequate directions and warnings.

This applies to drugs dispensed in the same form or with the same identity as received in interstate commerce. The case does not clarify the status of an over-the-counter product for only local distribution that has been made by a retail pharmacist from two or more ingredients received in interstate commerce. Many persons in the drug field believe that such a mixture becomes a new product which is not under Federal jurisdiction because it has not been in interstate commerce.

In the Georgia case, a pharmacist, Jordan J. Sullivan, received from a local distributor a bottle of sulfathiazole tablets originally shipped from Illinois. The tablets were properly labeled, including the prescription legend and a warning concerning toxic reactions. Subsequently, the defendant on two occasions allegedly sold some of the tablets over-the-counter under his own label. In one instance the dispensing container was labeled solely with the word [*sic*] "Sulfothiazal," and, on the second offense, solely with the word "Sulfathiazole."

The government charged that the drug had been misbranded under the Act since it bore neither adequate directions nor warnings.

The defendant maintained that the allegations were insufficient to constitute an offense, that the alleged acts were not in interstate commerce and that the law applied only to misbranding in interstate commerce, and that, in any case, the applicable section, 301(k), is unconstitutional as

being beyond the legislative power of Congress and an invasion of the police powers of the state.

In rendering his decision, Judge T. Hoyt Davis pointed out that "it is well settled that Congressional authority under the commerce clause includes the power to regulate intrastate activities which 'affect' interstate commerce or which are in the 'flow' of interstate commerce."

The Court emphasized that the House Committee report which accompanied the Food and Drug bill makes it clear that Congress intended to exercise this power in regard to misbranding of drugs. If 301(k) were not applicable, it was explained, misbranding provisions could be nullified by shipping properly labeled articles in interstate commerce and misbranding them after the transportation had ended.

"By the Federal Food, Drug and Cosmetic Act, Congress has sought to prevent the use of facilities of interstate commerce in conveying to and placing before consumers adulterated and misbranded articles," said Judge Davis. "That it may lawfully do this, the Court believes, is no longer open to question. Keeping within Constitutional limitation of authority Congress may determine for itself the means necessary to make its purpose effective. By section 301(k) Congress had exhibited the character of the means it deemed necessary to carry out its purpose, and the Court thinks it has kept within Constitutional bounds."

The Court held that it was not necessary to consider in this case whether or not the tablets involved were actually in interstate commerce at the time the misbranding occurred, but pointed out that this might be construed as misbranding in interstate commerce. The deciding point here was that the misbranding took place in a situation set forth in 301(k), namely, "while such article is held for sale after shipment in interstate commerce."

Interpreting this provision, the Court said: "In order to give effect to the purposes of the Act, the protection of the consumer, the prohibitions relating to the article must go along with it while it is being held for sale by anybody, whether the original interstate consignee, wholesaler, distributor, or retailer. The article in the hands of any dealer and until it reaches the ultimate consumer is being held for sale."

In deciding whether or not there had been an

actual misbranding, the Court concluded from an analysis of 301(k) and labeling regulations thereunder that there was "no room for doubt that the acts charged are within the meaning and purpose of the statute."

In general, the Food and Drug Administration now permits use of the prescription legend only on products for which adequate directions and warnings cannot be devised to make them both safe and efficacious when used by laymen. As a practical matter, the pharmacist therefore had no alternative but to use sulfathiazole tablets only for prescriptions.

Judge Davis took occasion to point out that the prescription-legend regulations "require the drug to be sold on a physician's prescription and to bear the directions for use specified in the

prescription." He specifically held that "the 'prescription legend' is not a substitute for adequate directions for use."

This statement also has significance in regard to manufacturers' labels on over-the-counter products. It seems to preclude a possible legal loophole—sought by at least one manufacturer—on the assumption that the legend itself constitutes the required "adequate directions for use" on drugs that are not harmful when used by the layman. If this were permissible, the legend would again become meaningless, as it often was under the old regulations. FDA's position, under the October 1945 regulation, is that the legend must be reserved as a warning to pharmacists that a product is not safe or effective for self-medication.

PHARMACY'S ROLE IN POSTWAR ARMY

PLANS for more efficient and extensive use of pharmacists in the Army Medical Department have been submitted to the War Department General Staff by Maj. Gen. Norman T. Kirk, the Surgeon General. That the Army's postwar plan also calls for incorporating the Pharmacy Corps into a proposed Medical Service Corps is confirmed in the following statement released from the Office of the Surgeon General:

In Gen. Kirk's plan legislation will be sought to organize a Medical Service Corps which will place the Pharmacy, Sanitary and Medical Administrative Corps under one table of organization. Provisions are made for a pharmacist officer to serve in the Office of The Surgeon General. That officer will act as adviser to the Surgeon General on all pharmacy matters and will direct pharmaceutical activities of the Medical Department.

Utilizing pharmaceutical training and aptitudes to the utmost, pharmacist officers will be charged with the purchase, examination, shipment, storage and standardization of the drugs and medical supplies required by the Army. They will coordinate the preparation of supply tables and aid in preparation of standards of drugs and medical supplies.

In command functions they will be placed in charge of all types of medical supply depots as well as subordinate positions in the depot. And they will be named assistants to surgeons in battalions and regiments, as commanders of headquarters and battalion units, adjutants, medical and general supply officers and laboratory officers in medical and general laboratories.

No little part of their future duties will be in-

structing at training schools. Pharmacy officers will be especially sought in Regular Army commissioned ranks for duty in the postwar Army, which will require three officers of their capabilities for every thousand men. About 1500 will bring table of organizations up to strength in servicing the contemplated 500,000 peacetime Army strength. It is thought that additional duties given pharmacists will release other Medical Department officers from administrative duties.

Further, pharmacists will be qualified to serve in multitudinous hospital capacities as pharmacy officer, executive officer, adjutant, supply officer, mess officer, registrar, evacuation officer, hospital detachment commander and detachment of patients commander. They will compound and dispense medicines in units as large as General Hospitals and Hospital Centers.

In strictly combat organizations, the pharmacists will assume more authority than ever before. They will serve as medical and general supply officers to medical groups and battalions and command ambulance units.

In procurement jobs they will deal with contracts, purchase, inspection, shipment, storage, testing and standardization of medical equipment. Further, pharmacists are playing vital roles in administrative positions in the Office of The Surgeon General.

Gen. Kirk stated that pharmacy officers will receive the same pay, emoluments and retirement benefits as other officers of similar grade and length of service in the Regular Army. Promotions in field grade will be, as in the case of other branches, consistent with need.

FOOD AND DRUG CONTROL

*40TH ANNIVERSARY OF LEGISLATION MARKS INCREASED SIGNIFICANCE
TO PUBLIC HEALTH OF U. S. COMMUNITIES, WITH GOALS EXTENDED TO
ACHIEVING EFFECTIVE WORLD COOPERATION IN POSTWAR HEALTH FIELD*

by THOMAS PARRAN

SURGEON GENERAL, U. S. PUBLIC HEALTH SERVICE AND PRESIDENT, INTERNATIONAL HEALTH CONFERENCE

FORTY years ago when the Pure Food and Drug Bill was before the 59th Congress, many of the industries which some of you represent were opposed to the proposed legislation. In 1938, however, the same industries backed the greatly strengthened Federal laws governing the content, labeling and standardization of food, drugs and cosmetics. And finally, today, a professional association representing the same industries regulated by the Pure Food and Drug Law, celebrates the anniversary of that law.

We in the Public Health Service, like you of the food and drug industry, long have recognized the determining influence of Dr. Harvey Wiley in shaping the basic legislation. He consistently supported the principle that safeguarding the purity and strength of foods, drugs and biologics is a proper and important function of government on behalf of the people.

The record shows that the Marine Hospital Service, predecessor to the Public Health Service—and at that time the only Federal health agency—actively urged the enactment of the original food and drug law. In addition, the Public Health Service since 1902 has been directly responsible for the licensing of biologic products. In this work it has developed a relationship which, over a period of years, represents one of the outstanding examples of cooperation and mutual understanding between industry and government.

All of these mileposts in the legislative history of drugs and biologics control mark very real contributions to the public health. Through them untold sickness and death have been prevented that otherwise would have occurred. Our success to date has generated a public confidence that is as sobering as it is gratifying. You in industry and we in government are looked upon as guardians of the public health, and we have the joint responsibility for maintaining and strengthening the safeguards already established, and for developing new ones as needed.

The signs along our road point out quite clearly the value of industry-wide adoption of self-im-

posed standards in advance of restrictive legislation. They indicate also, as you can testify through your own industry balance sheets, that a philosophy of business practice based upon the welfare and protection of the consumer contains a major element of success.

The original Food and Drug Law was an important landmark in health legislation. The fortieth anniversary of the law comes at a time when we can count great gains along these lines. Today there are no less than 170 measures before the Congress concerned directly or indirectly with health.

They deal with medical care, mental health, medical research, dental research and service, a nation-wide network of hospitals and health centers, the training of health personnel, the prevention of stream pollution, and many other important problems. They are tangible evidence of the people's demand for public health and medical care programs strong enough to make greater inroads against sickness in our land, and make them more quickly than we have in the past.

We cannot afford to be complacent about our food and drug standards, nor in a larger sense, about our public health achievements as a whole. We are faced with the challenge of keeping pace with the swift moving frontiers of science and with the expanding social concepts of man's responsibility to promote the well being of his fellow man. New drugs and biologicals are constantly being developed whose manufacture and distribution may require additional safeguards. Penicillin and streptomycin are but two of the most recent examples.

In our efforts to protect the public in the manufacture and sale of food and drugs, we cannot help feeling a deep concern over some of the advertising techniques promoting the sale of products to the general population. In this field standards self-imposed by the industries are urgently needed. I am referring particularly to the widespread use of extravagant claims and

promises held out or implied in drug advertising on the radio.

At almost any hour of the day, listeners may hear announcements offering relief for a wide variety of human ills. In many of these cases no factual information is supplied to limit the hopes that may be aroused by the appeals. Although the physician is referred to at times in glowing terms, there is too seldom any reference to the importance of seeking competent medical diagnosis or treatment. An announcement which recommends that a certain product be taken every morning and night by everyone over 35, or states that 3 out of 4 persons suffer from vitamin deficiencies which are correctable by taking X brand of vitamins, obviously is not in accord with the therapeutic needs of the population. These are only samples of a trend that in my opinion is reaching disturbing proportions.

In the American pattern any product which is to be sold widely must be advertised. Radio is an important medium. Often, however, the enthusiasm of the sponsor gets out of bounds.

In setting improved standards for drug advertising, radio can look to an excellent example. Some years ago the newspaper industry took aggressive action in cleaning up drug advertising in their columns. A few representative and socially conscious newspapers of the country led the way and most of the others since have followed. Today many papers go so far as to conduct surveys to be sure that advertised products conform to established standards.

It is not too much to hope—even to expect—that the radio industry will do the same or even a better job once the need for such action has been made clear. Radio's contribution to public service has been notable. It has contributed to the advancement of health knowledge among the masses of our people.

The establishment of safeguards in drug advertising offers another opportunity for public service. You who are so keenly interested in both the welfare of the drug industry and the rights of the common man might appropriately work out this matter with the leaders of radio and advertising.

The upsurge of action to protect the individual's health and promote his welfare is moving not only toward higher national goals, but toward world-wide goals calling for international planning and action in the field of health. Even now, there is convened here in New York an assembly of historic significance in the annals of public health and in which you have a very large stake. I refer to the international health meeting.



SURGEON GENERAL THOMAS PARRAN

This is the first general conference called under the auspices of the United Nations. It is the largest international health conference ever held, and the most representative. Health is an appropriate subject for the first general conference, since if full cooperation among the nations is not forthcoming in this field there can be little hope for such cooperation in more controversial fields. Inevitably, there will be some differences, but I am confident they will be resolved. The leading public health experts of the world are gathered here, and these first few days have been marked by a scientific and professional atmosphere.

The speed with which this meeting has been called following the signing of the Charter of the United Nations in San Francisco a year ago, testifies to the thoroughness of preliminary foundations. It testifies also to the practical value of previous international experiences in health agreements, even as limited as they were.

In 1851 the French government called an international conference to discuss uniform quarantine codes. Soon after the turn of the century there came into existence the Office International

d'Hygiene Publique and the Pan American Sanitary Bureau, which at the outset were concerned primarily with administering treaties dealing with the exchange of epidemic intelligence and preventing, through quarantine, the spread of disease from one country to another.

Later these two organizations expanded their programs into other important fields. The League of Nations established a Health Organization which was highly successful. At one time or another, important studies were sponsored in malaria, nutrition, rural hygiene, syphilis and leprosy. International exchange of students and health experts was fostered. And, as you all know, significant progress was made in the standardization of drugs and biologicals. This is a sound heritage of experience upon which the new international health organization will draw. The tasks ahead are great, but their accomplishment will bring great rewards.

Our government last year expressed its willingness to join the other major powers in sponsoring an international health conference and offered to act as the host for it. However, since the United Nations was being shaped so rapidly, it was agreed that the conference might more appropriately be held under its aegis.

Preparatory to the New York meeting, there was convened in Paris in March of this year, a technical committee commissioned by the Economic and Social Council of the United Nations to draft a preliminary charter for the proposed world health organization. It is this document which the health conference at Hunter College is now discussing.

The committee of experts which met in Paris proposed an organization sufficiently flexible and with enough authority to deal comprehensively with all international health problems, both those of an emergency nature and those endemic problems which are always with us.

Health As a Fundamental Right

A basic concept of the proposed charter, or constitution, is that health is a state of physical fitness and of mental and social well being, not only the absence of infirmity and disease; that the right to health is one of the fundamental rights of every human being, without distinction of race, religion, political belief, economic or social condition. This philosophy meshes at many points with that of the United Nations, which is dedicated to improved standards of living for all peoples, to a fuller life, a richer life. The fundamental freedoms can be realized and

maintained only when people are healthy, well nourished and protected against disease.

The interdependence of nations in the field of health is widely recognized. The realization that lines on maps do not prevent the spread of disease is underscored time and again. The experience of any nation in the promotion of better health is of value to all other nations and, conversely, substandard health services and failure to control epidemics in any nation constitute a common danger.

International Objectives

Specifically, if the substance of the preliminary charter is adopted, the world health organization would, among other things:

Assist governments in strengthening their national health services, including loan of technical experts when requested to do so.

Assist in the development of an informed public opinion among all peoples on matters of health.

Promote more effective methods for the prevention of disease, the improvement of health and the extension of longevity through more intensive scientific research on an international scale.

Foster professional education through improved standards of teaching and training in health, medical and related fields by means of fellowships, courses, study tours and exchanges of visits.

Evaluate medical care plans and services from the point of view of both medical and hospital practice.

Promote, with the cooperation of other specialized agencies, the improvement of nutrition, working conditions, housing, and related environmental factors affecting health.

Standardize diagnostic procedures as desirable, and develop, establish and promote international standards for pharmaceutical, biological and related products.

In short, what we expect from the world health organization when it comes into operation is a dynamic world health center. Here, the most up-to-date knowledge of the world would be assembled on every subject pertaining to health, medicine and the related sciences. Here the nations of the world would go for information and for help.

We have come a long way since the early days when international health action was limited to quarantine against cholera, plague and smallpox. We are now on the threshold of a health concept that is universal in scope of action as

FDA'S FORTIETH ANNIVERSARY

The month of June marked the fortieth anniversary of the original Federal Food and Drug Act. At a commemorative meeting called by the Section on Food, Drug and Cosmetic Law of the New York State Bar Association, pharmaceutical leaders heard a series of papers and tributes concerning the work of the Food and Drug Administration and efforts to provide public protection in this field.

Surgeon General Parran, one of the guest speakers, paid tribute in the accompanying paper to achievements of FDA and pharmacy during the four decades, called attention to the need for further polishing of at least one facet of the pharmaceutical industry, and revealed extended horizons of global scope for health activities.

well as in geography. You can readily see, therefore, that the health problems to be encountered—in fact those already being encountered—cut widely across the relations between nations.

Many other international agencies touch the field of health. For example, the Food and Agriculture Organization is concerned, on a world-wide basis, with nutrition; the International Labor Office with industrial hygiene and social insurance; the civil aviation agency with the spread of disease through rapid transport; the Trusteeship Council with the health of dependent peoples; the Narcotics Commission with habit-forming drugs. It is to be expected that the world health agency will work with these and other agencies in technical matters and join with them in reaching a common goal. It is contemplated, also, that the Economic and Social Council of the United Nations will act as the coordinator to prevent overlapping and gaps in those fields with which two or more specialized agencies are concerned.

In the same way as official agencies are being brought into the over-all plans, so it is expected that leaders like yourselves will be asked to give the benefit of your interest and wise counsel when plans of international action are being formulated. The pending proposal which would

strengthen and expand international standards for pharmaceutical, biological and related products should be gratifying to you. As experts, you can provide guidance and support for a constructive world-wide program to raise and maintain standards for foods, drugs and medical devices.

In approaching this objective, we are of course fully aware of the splendid work that has been carried on in the development of drug standards by the various nations through voluntary and public agencies. Here in the United States the official compendia recognized under our laws are the work of experts chosen by the respective medical and pharmaceutical organizations. The standards for drugs and biological products in these compendia are of the highest order. It is but natural, therefore, for us to feel that these standards should apply to products supplied for export or import trade, as well as to interstate commerce. As you know, there are some countries which have no standards at all for the manufacture, distribution and sale of drugs.

As a further objective, I hope we can agree that products failing to meet standards of the nation in which they are produced should not be dumped into international commerce. Such a policy would not only protect the public's health but also would promote sound international commerce and friendship.

Based on this premise, it is obviously desirable that minimum international standards be devised for drugs and biological products in common use.

In the matter of foods, a similar task awaits the appropriate international bodies. The nutritional aspects of the program might well be a joint undertaking for the Food and Agriculture Organization, and the world health organization.

Drug Standards

It is clear, therefore, that there is a need for further international teamwork in respect to food and drugs. Although a beginning has been made on the establishment of international standards, the job yet to be done is one of magnitude. The value of uniformity in the various national pharmacopoeias has been recognized for many years. The necessity for the unification of standards for drugs in universal use and for uniformity in strengths and formulas of preparations of drugs has been well recognized but requires further implementation.

A uniform system of nomenclature is likewise a basic consideration. It is particularly important

that in all countries the same name shall designate a drug of the same standard of strength and composition. Furthermore, it is important that the labels of drugs set forth clearly the standard under which the drug is sold. Differences in national standards and nomenclature are a drawback to the spread of medical and pharmaceutical knowledge. They cause serious difficulty for physicians and constitute a possible danger to patients. Let me give you an example of what I mean. Sulfanilamide is known by that name only in the United States. This identical drug is sold under more than twenty names in another country.

Another pressing international need in the field of our common interest is to compile and publish the food and drug laws of the different countries. At the present time these laws are not available in a central place nor in a single language. If they were compiled and published, together with other basic health laws and administrative health patterns of the various countries, an invaluable reference source would be established. This type of clearing house is one important element in establishing international biological and pharmaceutical standards.

Compiling the food and drug laws of all nations, and establishing uniform drug standards are but two of the initial steps that might be taken in a comprehensive program for the international standardization of food and drugs. Such a program is, in turn, but a part of the larger world health movement.

In the historic effort upon which we are now embarked I ask your encouragement and your support. While my topic has been the contribution which our food and drug laws have made to the health of our people, I could not overlook this timely opportunity to pay deserved tribute to you who represent the industry. Neither could I resist asking that we turn to the living future where so much depends upon our actions now.

An international opportunity impends. It is an international obligation as well—an obligation which falls heavily upon each of you. We have as our goal in the world health organization the same sort of teamwork between governments and industries that we have developed so effectively. We who are helping lay the foundations of world health look for the same guidance and help from the drug industry on an international scale as in meeting national problems.

ADDRESSES WANTED

MAIL addressed to the following A. P. H. A. members has been returned by the post office. If any of our readers know the present address of any of those listed below it will be greatly appreciated if they will furnish us with this information.

Arrove, Forrest S. (Pvt.)	Friedman, William M. (Ph.M. 1/c)	Moore, Jessie T.
Alcott, Floyd M.	Fulton, John D. (S2/c)	Nash, F. R.
Alexander, E. E. (Cpl.)	Gamboa, Ignacio Castro	Patterson, Duane R. (C.Ph.M., USN)
Bennet, Rutherford A.	Goldstein, David	Potthoff, Orlando P.
Belz, Richard Emil (Lt., jg, USNR)	Greenblatt, Eugene (Sgt.)	Rau, Charles F. (A.S.)
Bisland, Merle E. (Lt.)	Gruz, Nathan I. (Lt.)	Reeves, William I. (Lt.)
Bock, William H. (Sgt.)	Gude, J. A., Jr. (Pharmacist, USNR)	Richards, J. T. (Lt. Col.)
Brown, Richard B. (Sgt.)	Hachtel, Viola	Sams, Ethel Wagner
Brown, M. Elizabeth	Harris, J. W. (Lt.)	Scarbrough, Carroll (Lt., jg)
Chavez, Marco A. (Pvt.)	Hastings, Sidney S.	Snow, Carmel M.
Clark, William Walker	Henkin, Bernard (Captain)	Schechter, Seymour
Coats, Oliver G. (C.Ph.M.)	Hershberg, Sheldon M. (Sgt.)	Schweig, Israel (Pfc.)
Cole, Osco N. (Captain)	Jacob, Karl	Shiigi, Kenneth
Cook, Frederick M.	Katz, Malcolm (HA 1/c)	Stein, David
Craft, Francis Edward	Killackey, Frank	Stewart, Ollie R. (Ens., USMS)
Cohen, Harry James (Sgt.)	Konwiser, A. Lincoln	Sumner, Walter H.
Daniel, Sam H. (Sgt.)	Landon, Frederick W.	Svedres, Edward V. (Lt., jg)
Davidson, M. D. (CM3c)	Lazarus, Leon J. (Lt., jg)	Thompson, Barnard
Deutzer, Harry J.	Leckband, Theodore A.	Thompson, Charles
Douglass, Frances	Lerner, George G. (T/Sgt.)	Taurozzi, Ralph (T/s)
Eckstrom, Calvin W. (Sgt.)	Lindsey, Hugh (C.Ph.M., USN)	Titus, Frank D., Jr. (Lt., jg)
Ellis, Francis R.	Louie, William L. (T/5)	Tolles, King O.
Featherstone, Lauren R. (T/-Sgt.)	Masunaga, George (Pvt.)	Tusing, Thomas
Fichera, Alfio F. (T/Sgt.)	Metzger, Elmer W.	Vetrano, Carmine V. (Sgt.)
Finkelstein, M.	Mathis, Laurie	Williams, T. D.
Fouch, Franklin Wheeler (Pfc.)	McPherron, Cecil L.	Witt, Ewald
Frad, Gloria Anne	Moore, Mrs. Evelyn R.	Zimmermann, L. Fredda
		Zuber, A. J.

PLANS COMPLETED FOR MEETING

PLANS for A. Ph. A.'s first postwar meeting are now being completed. Leading off the convention week program at Pittsburgh's Hotel William Penn will be the American Association of Colleges of Pharmacy, with the first session scheduled for 2 p. m., Sunday, August 25. The following morning (Monday) will mark the opening meetings of the National Association of Boards of Pharmacy and the Conference of Pharmaceutical Association Secretaries.

Tuesday, August 27, the first sessions of the American Society of Hospital Pharmacists and of the American College of Apothecaries get under way at 9 a. m.

Meetings of the AMERICAN PHARMACEUTICAL ASSOCIATION itself start Tuesday afternoon, August 27 and continue through Friday, August 30. Outstanding speakers at the various sessions will include President George A. Moulton; President-elect Earl R. Series; Dr. Paul B. Dunbar, Commissioner of Food and Drugs; Dr. Austin Smith, secretary of the A. M. A.'s Council on Pharmacy and Chemistry; Dr. E. C. Elliott, director of the pharmaceutical survey being conducted by the American Council on Education; Comdr. W. Paul Briggs, director of pharmacy service for the Veterans Administration; Dr. E. Fullerton Cook, chairman of the U. S. P. Revision Committee; Dr. Justin L. Powers, chairman of the National Formulary Committee; and

Surgeon General Norman T. Kirk, U. S. Army.

Immediately preceding convention week, August 22 through 24, the Plant Science Seminar will hold its twenty-third meeting. The Roosevelt Hotel, at 6th St. and Pennsylvania Ave., will be the headquarters for the Seminar. The opening session is scheduled for 10:30 a. m., Thursday, August 22, at the Hotel.

This will be followed by a three-day program of lectures and field trips designed for those with a special interest in botanicals and plant life. Most of Saturday will be devoted to a botanizing trip to Ohiopyle, Pa., with Dr. O. E. Jennings, acting director and curator of botany at the Carnegie Museum of Pittsburgh, serving as guide.

A. Ph. A. Convention Committee

Plans to welcome American pharmacists to Pittsburgh, August 25-30, have been made by the following members of the Local Committee for the A. Ph. A. convention

Executive Committee: Hugh C. Muldoon (General Chairman), dean of Duquesne University School of Pharmacy; George D. Beal, chairman of the A. Ph. A. Council, Edward C. Reif, dean of the University of Pittsburgh School of Pharmacy; Stephen Wilson (Local Secretary), professor of pharmacy University of Pittsburgh.

Finance and Budget Committee: James C.

HUGH C. MULDOON

General Chairman



STEPHEN WILSON

Local Secretary



Sims (Chairman), vice-president and director of the Sun Drug Co.; George D. Beal, assistant director of the Mellon Institute for Industrial Research; Robert R. Gaw, president of the McKennan Drug Co.; Joseph H. Laufe, retail pharmacist of Greensburg, Pa.; George L. McMillin, retail pharmacist and chairman of the executive committee of the Pennsylvania Pharmaceutical Association; Fred Schiller, retail pharmacist; John R. Thompson, chairman of

the Board, Pittsburgh College of Pharmacy, and vice-president of the George A. Kelly Co.; George O. Yohe, president of George O. Yohe, Inc.

Entertainment Committee: Edward C. Neid (Chairman).

Reception Committee: William H. Whitman (Chairman).

Publicity Committee: W. John Davis (Chairman).

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STATUS OF RUTIN REMAINS UNCERTAIN

A REPORT OF THE COUNCIL ON PHARMACY AND CHEMISTRY, AMERICAN MEDICAL ASSOCIATION

RECENT newspaper articles announcing rutin as a "cure" for high blood pressure, based on a release from the United States Department of Agriculture, have again demonstrated the inadvisability of premature publicity concerning new medical discoveries. As a result of these articles the office of the Council on Pharmacy and Chemistry has received numerous inquiries concerning the properties and availability of this new drug.

The only published report in a scientific periodical about the clinical use of rutin at the time this statement was prepared, is a brief note by Griffith, Couch and Lindauer (*Proc. Soc. Exper. Biol. & Med.*, 55:228 [March], 1944) describing preliminary observations on 14 patients with increased capillary fragility treated with rutin. The authors concluded that "in certain cases rutin appears to have the property of decreasing capillary fragility in subjects in whom this fragility is initially increased."

Rutin is a glucoside found in a number of plants, the principal sources being tobacco and buckwheat. Laboratory investigations have been conducted by J. F. Couch and his associates at the Eastern Regional Research Laboratory of the United States Department of Agriculture at Chestnut Hill, Pa. The clinical work on rutin has been done chiefly at the University of Pennsylvania under the direction of Dr. J. Q. Griffith Jr. Although several firms are interested, no commercial production of rutin has been made.

Although newspaper accounts state that rutin is a treatment for high blood pressure, the Agriculture Department release stated that, "according to clinical observations at the Medical School

of the University of Pennsylvania, rutin is effective in the treatment of conditions arising from high blood pressure associated with increased capillary fragility."

This is obviously quite different from saying that rutin is a treatment or "cure" for high blood pressure. Furthermore, rutin has not been demonstrated to have any effect on the blood pressure of animals or man. Also so few data have been presented on variability of capillary fragility in untreated cases of hypertension that assessment of the effect of therapeutic agents is still hazardous.

Based on the meager amount of scientific evidence that has been available, it is unfortunate that the hopes of thousands of sufferers from hypertension have been raised by irresponsible and premature publicity. Increased capillary fragility is not a common complication of hypertension, and the vascular accidents which are frequently the serious sequelae to this disease may not be due to alterations in capillary resistance. Furthermore, the methods of measuring capillary resistance are crude, and workers in this field are not agreed on the reliability of any of the methods of measurement now employed.

In considering the reports on rutin it is well to keep in mind the experience with "hesperidin," or "vitamin P," which was alleged several years ago to increase capillary resistance. Carefully controlled experimental and clinical studies on this substance failed to substantiate the claims advanced by the original proponents (Scarborough, Harold: *Lancet*, 2:610 [Sept. 10], 1938). It is to be hoped that history will not repeat itself in the case of rutin.

FIFTH SUPPLEMENT to the NATIONAL FORMULARY SEVENTH EDITION

I. REVISION OF THE MONOGRAPH ON PHENOTHIAZINE, NATIONAL FORMULARY VII, PAGE 322

PHENOTHIAZINE

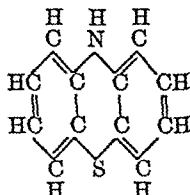
Phenothiazina

Phenothiaz.

Thiodiphenylamine

$C_{12}H_9NS$

Mol. wt. 199.26



Description—Phenothiazine occurs as a pale greenish yellow to dark greenish gray powder, granules, or flakes. It is tasteless and has a slight characteristic odor. Phenothiazine is slowly oxidized when exposed to the air over a long period of time, the color becoming darkened.

Solubility—One Gm. of Phenothiazine dissolves in about 75 cc. of alcohol, in about 5 cc. of acetone, in about 20 cc. of chloroform, and in about 45 cc. of toluene at 25°. It is usually incompletely soluble in ether, and is insoluble in water.

Freezing point—The freezing point of Phenothiazine is not less than 179°, page 360.

Identification—

A: One drop of ferric chloride T.S. added to 10 cc. of an alcohol solution of Phenothiazine (1 in 2000) produces a green solution.

B: Add 1 cc. of hydrochloric acid to 100 cc. of water, heat to 80° and add 5 cc. of hydrogen peroxide T.S. Slowly add 20 cc. of an alcohol solution of Phenothiazine (1 in 100) to the well-stirred aqueous solution, maintaining the temperature at 80°: a deep red solution is produced, due to the oxidation of Phenothiazine.

Loss on drying—When dried over sulfuric acid for 3 hours, Phenothiazine loses not more than 1 per cent of its weight.

Residue on ignition—Phenothiazine yields not more than 0.2 per cent of residue on ignition.

Ether-insoluble substances—Completely extract an accurately weighed quantity of Phenothiazine with 5 cc. of ether, evaporate the ether, and weigh the residue; the weight of the residue does not exceed 1.5 per cent.

AVERAGE DOSE (based on the weight of the animal)—

Horses and Mules, 30 to 50 Gm. (approximately 8 to 13 drachms)

Cattle, 50 to 80 Gm. (approximately 13 to 20 drachms)

Calves, 24 to 40 Gm. (approximately 6 to 10 drachms)

Swine, 4 to 30 Gm. (approximately 1 to 8 drachms)

Sheep and Goats, 25 Gm. (approximately 6¼ drachms)

Lambs (up to 60 lbs.), 15 Gm. (approximately 4 drachms)

Chickens, 0.5 Gm. (approximately 7½ grains)

Caution: *Animals should be treated with Phenothiazine only upon the advice of a veterinarian.*

Freezing Point of Phenothiazine

For the purpose of the National Formulary, the freezing point of a substance is defined as that temperature, approached by cooling a liquid, at which the solid phase is in equilibrium with the liquid phase. If supercooling does not take place, this is the lowest temperature remaining constant for a short period of time. In the presence of supercooling this point is the highest temperature remaining constant for a short period of time during the solidification of a substance from its molten state.

Apparatus Required—1. A pyrex test tube approximately 2.5×15 cm. to serve as a melting tube.

2. A larger pyrex test tube, 4×17 cm. to serve as an air jacket. The smaller tube is fitted through a cork stopper of such dimension that the tube may be inserted into the larger tube, telescope fashion.

3. Two 600-cc. beakers containing oil or other suitable bath fluid suitable for use at a temperature as high as 215° . The first bath is maintained at $210^\circ \pm 5^\circ$; the second at $175^\circ \pm 2^\circ$.

4. A ring stirrer made from a glass rod 3 mm. in diameter bent in such a manner that it fits into the smaller tube and permits free vertical motion around the thermometer.

5. A type II thermometer.

6. A watch or clock with a second hand.

Procedure—Fit the smaller test tube through the cork stopper and add about 5 Gm. of phenothiazine. Place in the bath at 210° and stir until the phenothiazine melts, then add successive 5-Gm. portions, melting each one with stirring before adding the next, until about 30 Gm. have been added or until the molten phenothiazine reaches the immersion mark on the thermometer. Place this tube inside the larger tube and immerse in the cooling bath at 175° . Insert the thermometer into the molten phenothiazine and stir continuously with the ring stirrer. After the sample has reached 185° remove the heat from the oil bath, or adjust in such a manner that the bath cools at the approximate rate of 1° per minute. While maintaining constant stirring of the sample, record its temperature every 30 seconds. If supercooling does not occur, the temperature will continue to fall until it reaches the freezing point when it becomes constant. After the temperature has reached the minimum, the recording of 5 consecutive readings establishes the end-point. In samples which exhibit supercooling, the end of supercooling will be indicated by a rise in temperature, and the highest reading obtained at the time of this rise is taken as the freezing point. Report as the freezing point the highest reading obtained after supercooling or the constant value obtained during the cooling period, estimated to the nearest 0.1° .

This Fifth Supplement to the National Formulary, Seventh Edition, is issued by action of the Committee on National Formulary, and with the approval of the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION. It is effective from June 15, 1946 until further notice.

JUSTIN L. POWERS, *Chairman*
Committee on National Formulary
American Pharmaceutical Association

Washington, D. C.
June 15, 1946

EDITOR'S NOTE: The Committee on National Formulary has authorized the revised monograph for phenothiazine given above since the assay and melting point specified in N. F. VII did not prove entirely satisfactory as official standards. The freezing-point determination authorized in the Supplement was found to be much more satisfactory as a method of controlling purity. Inaccuracies inherent in the colorimetric assay procedure did not permit differentiation between commercial "green" phenothiazine, N. F. and a more highly purified product. This and other considerations resulted in deletion of the assay from the revised monograph.

Reprints of the Fifth Supplement to the National Formulary may be obtained without charge by sending a self-addressed, stamped envelope to Justin L. Powers, Chairman; Committee on National Formulary, American Pharmaceutical Association, 2215 Constitution Ave., N. W., Washington 7, D. C.

PRESCRIPTION *Information* SERVICE

SUBMIT YOUR PROFESSIONAL PROBLEMS TO THIS JOURNAL, 2215 CONSTITUTION AVE., WASHINGTON 7 D. C., GIVING ALL PERTINENT DETAILS. SERVICE TO READERS IS PROVIDED BY THE A.P.H.A. LIBRARY AND TECHNICAL STAFF AND THE FOLLOWING CONSULTING BOARD OF PHARMACEUTICAL SPECIALISTS:

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ELIXIR OF VITAMIN B COMPLEX

Can you find for me a formula for a syrup of the vitamin B complex suitable for administering to children?—A. C., Illinois

An elixir of vitamin B complex suitable for this purpose is prepared at the Charity Hospital pharmacy in New Orleans as follows:

ELIXIR OF B COMPLEX

[Makes 1000 fluid ounces (7 gallons, 6½ pints)]

Thiamin hydrochloride.....	2.000
Riboflavin.....	4.000
Vitamin B6 hydrochloride...	.333
Calcium pantothenate.....	.362
Nicotinic acid.....	20.000
Alcohol.....	6 pints, 3 ozs.
Sugar.....	12 av. pounds
Butoben.....	94 gr.
Flavor.....	See below
Color.....	See below
Hydrochloric acid.....	See below
Water.....	6 gal., 1 pint

To 5 gallons 7 pints of water, add sufficient hydrochloric acid so that it will test pH 3.4. Dissolve the flavor in 5 pints of the alcohol and add it to the acidified water. Age for several days and filter with the aid of a small amount of talc. Dissolve the Butoben in 18 ounces of alcohol and add it slowly to the solution while rapidly stirring. Rinse the graduate with 1 ounce of alcohol and add it slowly while rapidly stirring. Add the nicotinic acid and the ribo-

flavin and stir until dissolved. Dissolve the vitamin B6 hydrochloride in 10 ounces of acidified water. Dissolve the calcium pantothenate in 10 ounces of this liquid and add 155 mg. of tartaric acid. Dissolve the thiamin hydrochloride in 10 ounces of acidified water. Filter these solutions through three small filter papers. Drain. Wash each filter with 1 ounce of the acidified water. Add the three solutions to the above and mix thoroughly. Add the sugar and stir until dissolved. Add a sufficient amount of the color. Strain the preparation through damp cotton flannel, smooth side down.

For color, we use a stock solution of 55 gr. Noka Brown (National) in 1 pint of distilled water. Only a few drops of this color per gallon of the preparation is required. For flavor, we use 1.5 ounces of a mixture consisting of 24 ounces oil of sweet orange, 2 ounces anethol, and 0.5 ounce of nutmeg.

PRESERVING EYE SOLUTIONS

Could you inform me of an effective means for the prevention of mold growth in stock solutions of ZnSO₄? These solutions are used in ophthalmic preparations.—A. S., New York

After investigating the preservative properties of several *p*-hydroxy benzoic acid esters, Arrigoni, Fischer and Tozer reported (*Arch. Ophth.* 26: 852-858, 1941) that a combination of the methyl and propyl esters is effective in low concentration. The combination finally selected was the

same as that used by Hasler (*Am. J. Ophthalm.*, 22: 423, 1930) and consisted of 65 parts of methyl-*p*-hydroxybenzoate and 35 parts of propyl-*p*-hydroxybenzoate. This mixture was used in 0.04% concentration.

Should you wish to obtain copies of the publications mentioned, the address of the *American Journal of Ophthalmology* is: Ophthalmic Publishing Company, 640 South Kingshighway, St. Louis, Missouri. *Archives of Ophthalmology* is published by the American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

STERILIZING INSTRUMENTS

A few physicians have asked me to compound for them a good, reasonable, sterilizing solution that is reliable and still will not rust their instruments. They are not interested in mercurial solutions. There is a newer type that interests me which I believe combines an alcohol radical with an ammonium salt. Could you furnish me with a formula so that I could make it in gallons?—D. H., California

The compounds to which you refer are no doubt the antiseptics of the quaternary ammonium type, represented by such commercial products as Ceepryn, Phemerol, Zephiran Chloride and Capacol. A paper on this class of antiseptics appeared in the August, 1945, issue of the *Scientific Edition* of THIS JOURNAL.

Chemical "sterilization" procedures, of course, have definite limitations no matter what disinfectant is used and cannot be relied upon as a safe technique. Steam heat under pressure (autoclave), or boiling water as a second choice, are preferred whenever heat would not affect the articles to be sterilized.

Gershenfeld points out in his book, *Bacteriology and Allied Subjects* (Mack Publishing Co., Easton, Pa., \$6), that spores, especially if in a dry state, are not killed by chemical sterilization unless a prolonged exposure is used. In using the cold process, it is highly recommended that all articles first be mechanically cleaned to free them from blood and other organic matter or oil and grease.

In using the quaternary ammonium compounds it must be remembered that they lose their bactericidal activity in the presence of soap, protein and some of the newer detergents. Therefore, any traces of these substances must be washed from the instruments before immersion in the solution. When instruments are stored

in solutions of quaternary ammonium compounds for long periods of time, Gershenfeld mentions that 0.5% of sodium nitrite is added to minimize corrosion.

Within the limitations mentioned, the quaternary ammonium compounds have been very favorably reported as cold disinfectants of medical and dental instruments.

A different type of disinfectant solution which is widely used is the Bard-Parker formaldehyde formula, compounded as follows:

Formaldehyde.....	3%
Alcohol.....	77%
Acetone.....	10%
Inert ingredients.....	10%

Tainter, *et al.*, have presented a paper on chemical sterilization of instruments in the *Journal of the American Dental Association* (31: 479, 1944) in which you may be interested. Copies of this journal may be secured from the American Dental Association, 222 East Superior Street, Chicago, Ill. They recommended the following as an acceptable formula, the ingredients being mixed in the order given:

Isopropyl alcohol.....	1000 cc.
Oil of rose geranium.....	2 cc.
Oil of cinnamon.....	4 cc.
Distilled water.....	780 cc.
Sodium nitrite.....	4 Gm.
Monoethanolamine.....	60 cc
Solution of formaldehyde, U. S. P.....	160 cc.

DELIQUESCENT OF CALCIUM IODIDE

I would greatly appreciate it if you would assist me with the following problem in filling capsules consisting of:

Aminophyllin.....	3 gr.
Phenobarbital.....	1/8 gr.
Calcium iodide.....	6 gr.
Magnesium oxide (light).....	1 gr.
<i>Mix et make 30 capsules; D. T. D.</i>	

The contents of the capsule discolors and, because of the deliquescent nature of the calcium iodide, the capsules tend to stick together. —J. B., New York

Calcium iodide is, of course, very deliquescent and apt to change color rather promptly. Usually it is preferable to mix material of this nature with some magnesium carbonate which serves as an absorbent. We question this procedure in your prescription because of the possibility of

reaction with the calcium iodide. We would, therefore, suggest that the calcium iodide be placed in the smallest possible capsule and this inserted in a capsule of a larger size into which the additional ingredients could then be placed. The resulting capsule might be inconveniently large. It may be preferable to secure the prescriber's permission to divide the prescription, placing the calcium iodide in one capsule and the other ingredients in another, one of each to be taken at a time. The addition of a small amount of activated charcoal to the calcium iodide might give it sufficient color to mask any change in color which would develop later.

OINTMENT PRESERVATIVES

I mislaid the copy of the PRACTICAL PHARMACY EDITION that contains the new hydrophilic ointment that will be made official. Could you please send me a copy of the article?

Why did the formula contain two preservatives?—M. B., New York

We are asking Prof. Louis C. Zopf, who developed the hydrophilic ointment discussed in the December, 1945, issue, to send you a reprint.

As to the use of both methyl and propyl parahydroxybenzoate in this formula, each of these has a greater inhibiting action on certain microorganisms than the other. Therefore the use of two preservatives is more effective than either would be alone.

PROCAINE WITH PENICILLIN

Many physicians order procaine hydrochloride solution to be given with penicillin to make the administration less painful. The usual proportion ordered is 1 cc. of 0.5% procaine hydrochloride solution to one dose of penicillin. There has been a difference of opinion regarding the mixing of these two drugs. If the procaine hydrochloride solution is mixed in the vial with the penicillin solution and allowed to stand for several hours, does any notable change take place in either drug?—M. L., Missouri

Mixing procaine hydrochloride solution with penicillin to reduce pain apparently has been a fairly common practice. The difficulty seems to be, although you do not mention this, that a precipitate is thrown down upon standing.

We have been unable to learn what chemical reaction may occur, but apparently it involves

impurities of penicillin rather than penicillin itself. Experiments have shown that the mixture of procaine hydrochloride solution with pure crystalline penicillin does not throw down the precipitate, and apparently no change occurs. When a mixture of commercial penicillin containing the precipitate was assayed, no loss of penicillin potency could be demonstrated. It is our understanding that, even though a precipitate may be present, such a mixture may be effectively and safely administered intramuscularly. Such a mixture of course must not be given intravenously, and the physician would want to take precautions in intramuscular administration that none of the mixture is injected into a vein.

If the mixture stands for some time before administration, there is also the possibility of hydrolysis of the procaine hydrochloride.

ATROPINE SUBSTITUTES

For some time I have been receiving inquiries from some of my physicians as to a formula which could be used to treat stomach disorders that are secondary to other nervous symptoms.

They have been impressed with preparations like Pavatrine with Phenobarbital and Trasentine with Phenobarbital, which have been presented to them as being of great advantage over atropine. However they are interested in a formula that they can write which will not have a trade name and which they can vary according to their needs.—A. N., New York

As your inquiry is primarily of a therapeutic nature, the following opinions have been secured from the office of the Council on Pharmacy and Chemistry of the American Medical Association:

Pavatrine and Trasentine are proprietary synthetic antispasmodics which are claimed to provide the desirable effects of atropine and papaverine without their undesirable side reactions. Neither of these proprietary products stands accepted by the Council on Pharmacy and Chemistry for inclusion in *New and Nonofficial Remedies*, and the firms which market them have not requested their consideration by the Council. At present the only Council-accepted atropine substitutes proposed for use in the alleviation of gastro-intestinal spasm are Novatropine (homatropine methyl bromide) and Syntropan (the phosphate of *dl* tropic acid ester of 3-diethylamino-2,2-dimethyl-1-propanol).

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Based on the replies which we have received from three competent clinical investigators in the field of gastroenterology and pharmacology, to

whom your question was referred for comment, we present the following observations relating to the problem in which you are interested.

One consultant writes that the use of Pavatrine or Trasentine and phenobarbital combinations in the treatment of "stomach disorders that are secondary to other nervous symptoms" immediately raises the question of what is meant by "stomach disorders" and "nervous symptoms." The drugs used would of necessity vary with different types of stomach disorders. In many instances, correction of the "nervous symptoms" by means of a sedative such as phenobarbital alone would go a long way toward correction of the secondary "stomach disorders." As a matter of fact Pavatrine and Trasentine have little effect on the stomach and it is not improbable that the phenobarbital constituent accounts for much of the therapeutic value attributed to the combinations.

Another investigator expressed the following views:

"Another reason why many physicians give drugs like belladonna or atropine is that they hope to block the effects of stimuli coming down from the brain along the vagus nerves. After years of study in the laboratory of experimental physiology and after reading nearly everything on the subject in pharmacologic journals, I have very little faith in my ability with any drug to block these vagus or parasympathetic effects. I doubt if we could do it without at the same time drying up the mouth and seriously weakening accommodation in the eyes.

"My experience with the other drugs such as Trasentine and Pavatrine has not been anything to make me enthusiastic, and I have quit using them. If the combinations which you mention do any good, I think they help only because of the phenobarbital which quiets the person's excitable nerves.

"If I were to use a sedative and an antispasmodic, I would use the phenobarbital and let us say atropine separately, the better to judge of the effects which I got, if any."

From the foregoing information it would appear that the use of such combinations as Pavatrine with Phenobarbital and Trasentine with Phenobarbital for the treatment of so-called "stomach disorders that are secondary to other nervous symptoms" is of questionable therapeutic rationality inasmuch as certain disorders in this broad category often respond to phenobarbital alone. If variable combinations of atropine and the barbiturate do not satisfactorily fulfill the therapeutic needs referred to, the physician would seem to have only two other alternatives, namely, the employment of plain Pavatrine or Trasentine tablets with phenobarbital tablets separately or the substitution of one of the other synthetic

atropine derivatives (Novatropine, Syntropan, etc.) for the Pavatrine or Trasentine constituent.

IRON-RUST STAIN REMOVER

What do you recommend to remove stains of iron rust?—J. C., Pennsylvania

The formula of a satisfactory stain remover of this type is given in *Pharmaceutical Recipe Book III*:

Cream of tartar.....	350 Gm.
Potassium binoxalate.....	350 Gm.
Oil of lemon.....	1 cc.

Mix the powders well and incorporate the oil of lemon.

Moisten the stained spot and rub with the powder.

DERMATITIS FROM PROCAINE

I seem to be allergic to Novocain. It causes a severe form of dermatitis and I have not yet found any coating to protect my skin. I wear gloves at the chair, but somehow the rash will begin at the glove top line and spread over the entire hand and wrist.—A. D., Alabama

Dermatitis due to procaine is not uncommon among dentists.

We understand that the use of rubber gloves solves the problem in most instances. It is unusual that the rash should spread over the entire hand despite this protective measure. An allergist in the U. S. Public Health Service, with whom we have discussed your query, suggests the possibility that you may also be allergic to the gloves. A dermatologist should be consulted for patch tests to determine just what the sensitizing agent or agents may be.

Experiments seem to indicate that sensitivity to procaine is highly specific in most individuals. Therefore some other local anesthetic of a similar type, such as tutocaine, might be used without difficulty. Even so, it should be kept in mind that sensitivity to these related compounds may also develop.

If you are not sensitive to rubber gloves and wish to continue to use procaine, it should be possible with some care to avoid contaminating the skin at the wrist with the solution. Sleeve guards that fit tightly over the glove at the wrist would provide additional protection. As supplied for use in industrial work, these are made of plastic fabric such as vinylite.

The Hospital Pharmacist

VALUE OF A WELL ORGANIZED FORMULARY*

by JAMES P. JONES

FORMERLY CHIEF PHARMACIST, UNIVERSITY OF CALIFORNIA HOSPITAL

A HOSPITAL formulary may be a most important adjunct to the efficient and economical operation of a hospital. This is often not appreciated until one considers what a formulary means to the doctor, nurse, pharmacist, patient and administrator.

The doctor is saved much time and many inconveniences by being able to refer to a pocket-sized formulary. The young internist especially finds the formulary a valuable guide of reliable information, while the visiting clinician refers to it often since it is a medium through which the various departments may indicate the professional services which are available.

This book should give information regarding X-ray examinations, drugs for diagnostic purposes, laboratory and clinical procedures and other helpful reference material as well as a therapeutic index with a list of reliable drugs and formulas. Such information will help give more patients attention and treatment with minimum delay.

To the nurse the formulary means a source of knowledge which will help orient her in the customs of the hospital. It is also a reliable reference in which she can check on new drug dosages and procedures.

The pharmacy probably will derive more benefit from the formulary than any other department of the hospital. This will be especially true if there are large clinics operated in conjunction with the hospital. The pharmacy will not have to stock several items of the same pharmacological

value, since the formulary usually suggests the use of drugs and preparations listed in the U. S. P., N. F. and N. N. R. or special formulas developed by the hospital staff.

With the necessity of having several brands or trade-marked preparations of the same drug eliminated, the pharmacist is able to purchase certain drugs in larger quantities at more favorable prices and there is an increased possibility of the pharmacy manufacturing a number of U. S. P., N. F. and special formulas at a considerable saving, often as much as 50 per cent or more. This is a very favorable factor tending to reduce the total pharmacy inventory and expense without sacrificing any of the professional service.

Another advantage is that the formulary will enable the pharmacist to anticipate the prescribing of certain preparations by the physicians. This gives the pharmacy a chance to have some preparations compounded and often packaged in convenient quantities for dispensing soon after the receipt of an order. Thus the pharmacist can render more and better service at less expense.

The patient is indirectly benefited by a hospital formulary through its effect on the efficiency, professional service and economy of the departments serving him. He should receive attention and treatment sooner than might otherwise be possible and he will also be able to have his prescriptions filled with reliable and fresh drugs, which can be compounded and dispensed with minimum delay and at the most favorable price. These factors, especially the professional service and the time and the expense involved, usually worry the patient and these are the factors which a hospital formulary may influence the most.

* One of a series, sponsored by the American Society of Hospital Pharmacists, currently appearing in the *Journal of Hospital Pharmacy* to promote a better understanding of adequate pharmaceutical service among hospital administrators.

The value of the formulary to the administrator is its combined value to the above groups and this usually means a more efficient and economically operated hospital with the best professional service. The administrator or any one preparing a hospital formulary must be warned that there is a grave danger of just the opposite effect being obtained if caution is not observed in setting up a formulary and the policy regarding it. This danger comes from the very element of the formulary which may contribute most to an increase in efficiency and economy—the element of standardization.

A Pitfall

The danger is not from rational standardization but from too stringent a standardization of procedures and formulas and the degree of this standardization is dependent upon the institution and situation involved. Some institutions may inadvertently sacrifice professional service and efficiency for the sake of the greater economy which may be effected by a standardization in which the physician is restricted to an inadequate choice of drugs, formulas or procedures.

This may be exemplified by any situation in which the hospital staff is restricted to the use of only one member of each of the various classes of medication, such as one antiseptic, one general anesthetic or one local anesthetic. This is an extreme and absurd example, however, it serves to point out a situation which may prevail to a lesser degree if caution is not observed in setting up a hospital formulary. Too much emphasis cannot be placed on the fact that the hospital staff must have available any useful procedure, drug or formulas.

The task of compiling a formulary is usually the responsibility of the hospital pharmacy committee and any specialists who may be available. All sections of the formulary, however, should be reviewed by staff members interested in their contents and any comments or suggestions made by them must be given serious consideration. This will assure cooperation of the hospital staff in the ultimate use and establishment of the formulary in the hospital.

Generally, only U. S. P., N. F. and N. N. R. drugs or formulas should be admitted to the formulary, an exception being made in cases of drugs or preparations of outstanding value or those which have been found to be exceedingly useful in the institution compiling the formulary. Essentially, the formulary must be tailored to the hospital and the staff of doctors, nurses and

pharmacists who are to use it in daily practice.

In compiling a formulary, the following topics may be considered and information given regarding them:

1. Prescription writing with a complete list of Latin abbreviations.
2. Size of prescriptions and orders which are most readily available.
3. Vehicles and colors.
4. Drugs subject to Federal and state regulations.
5. Buffered and isotonic solutions.
6. Table of pH indicators.
7. Tables of trade-marked preparations with their public names.
8. Antiseptics.
9. Drugs for diagnostic purposes.
10. Endocrine preparations.
11. The vitamins.
12. Available drug list.
13. Vaccines, serums and antitoxins.
14. Therapeutic index.
15. Hospital formulas.
16. Parenteral fluids with some of their uses.
17. Pediatric therapeutic index and procedures.
18. Well-baby clinic data.
19. Dental drug list.
20. Institution's dental drug formulas.
21. Charts indicating types of diets and their uses.
22. Average heights and weights.
23. Obstetrical data.
24. X-ray examination and consultations.
25. Laboratory and clinical procedures.
26. Common emergencies.
27. Treatment of burns.
28. Treatment of acute poisoning with a complete list of recognized antidotes.
29. Table of international atomic weights.
30. Sulfonamides and antibiotics.
31. Maximum safe doses of potent and dangerous drugs with emphasis on the irregularity of response and idiosyncrasy of the patient.
32. Sedatives and hypnotics.
33. Policy and purpose of the publication.
34. Index with adequate cross references.
35. A list of instruments and equipment with their location.

Frequent Revision Needed

Revisions of a formulary are very important and must be provided for as often as necessary. This should be at least as often as the revisions of the U. S. P. and N. F. If revisions are not made, the book soon loses its value and is worse than no formulary.

With the present rapid progress in medicine and pharmacy, it is advisable to revise a formulary as often as every two or three years. Even

The value of the formulary to the administrator is its combined value to the above groups and this usually means a more efficient and economically operated hospital with the best professional service. The administrator or any one preparing a hospital formulary must be warned that there is a grave danger of just the opposite effect being obtained if caution is not observed in setting up a formulary and the policy regarding it. This danger comes from the very element of the formulary which may contribute most to an increase in efficiency and economy—the element of standardization.

A Pitfall

The danger is not from rational standardization but from too stringent a standardization of procedures and formulas and the degree of this standardization is dependent upon the institution and situation involved. Some institutions may inadvertently sacrifice professional service and efficiency for the sake of the greater economy which may be effected by a standardization in which the physician is restricted to an inadequate choice of drugs, formulas or procedures.

This may be exemplified by any situation in which the hospital staff is restricted to the use of only one member of each of the various classes of medication, such as one antiseptic, one general anesthetic or one local anesthetic. This is an extreme and absurd example, however, it serves to point out a situation which may prevail to a lesser degree if caution is not observed in setting up a hospital formulary. Too much emphasis cannot be placed on the fact that the hospital staff must have available any useful procedure, drug or formulas.

The task of compiling a formulary is usually the responsibility of the hospital pharmacy committee and any specialists who may be available. All sections of the formulary, however, should be reviewed by staff members interested in their contents and any comments or suggestions made by them must be given serious consideration. This will assure cooperation of the hospital staff in the ultimate use and establishment of the formulary in the hospital.

Generally, only U. S. P., N. F. and N. N. R. drugs or formulas should be admitted to the formulary, an exception being made in cases of drugs or preparations of outstanding value or those which have been found to be exceedingly useful in the institution compiling the formulary. Essentially, the formulary must be tailored to the hospital and the staff of doctors, nurses and

pharmacists who are to use it in daily practice.

In compiling a formulary, the following topics may be considered and information given regarding them:

1. Prescription writing with a complete list of Latin abbreviations.
2. Size of prescriptions and orders which are most readily available.
3. Vehicles and colors.
4. Drugs subject to Federal and state regulations.
5. Buffered and isotonic solutions.
6. Table of pH indicators.
7. Tables of trade-marked preparations with their public names.
8. Antiseptics.
9. Drugs for diagnostic purposes.
10. Endocrine preparations.
11. The vitamins.
12. Available drug list.
13. Vaccines, serums and antitoxins.
14. Therapeutic index.
15. Hospital formulas.
16. Parenteral fluids with some of their uses.
17. Pediatric therapeutic index and procedures.
18. Well-baby clinic data.
19. Dental drug list.
20. Institution's dental drug formulas.
21. Charts indicating types of diets and their uses.
22. Average heights and weights.
23. Obstetrical data.
24. X-ray examination and consultations.
25. Laboratory and clinical procedures.
26. Common emergencies.
27. Treatment of burns.
28. Treatment of acute poisoning with a complete list of recognized antidotes.
29. Table of international atomic weights.
30. Sulfonamides and antibiotics.
31. Maximum safe doses of potent and dangerous drugs with emphasis on the irregularity of response and idiosyncrasy of the patient.
32. Sedatives and hypnotics.
33. Policy and purpose of the publication.
34. Index with adequate cross references.
35. A list of instruments and equipment with their location.

Frequent Revision Needed

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Science News Capsules

"SHOOTING STARS" by the thousands will flash through the sky in the early morning hours of October 9, if expectations of astronomers are fulfilled. Although the magnitude of a meteoric shower is difficult to predict, the earth will on that date be plowing through debris from the Giacobini-Zinner comet, which will have passed by eight days earlier. The earth comes within only 135,000 miles of the comet's path.

USEFUL MAGNIFYING POWER of the electron microscope has been increased from 100,000 diameters to more than 200,000 diameters by an improved magnetic lens developed at the RCA laboratories. General use of such high resolving power must await solution of certain technical problems. Eventually it is expected that heretofore unseen structural details of larger molecules, viruses and living cells will be revealed to aid medical science.

A NEW DESK-SIZE ELECTRIC COMPUTER will cut tedious hours of mathematical work to minutes in physical and chemical research. It has a special facility for solving linear simultaneous algebraic equations, representatives of the Consolidated Engineering Corp. of Pasadena, Calif., reported to the American Institute of Physics.

THREE OUT OF FOUR BABIES born at the turn of the century could be expected to reach the age of 25, while today three-quarters of the newborn babies will reach the age of 57. Average expectation of life at birth today exceeds 65 years, almost 16 years greater than at the beginning of the century.

RAM JET, the "flying stovepipe," may propel high-speed aircraft of the future or power the weapons of another war at twice the speed of sound. With no moving parts and no precision machinery, ram jet is essentially a pipe with a small opening at the front and open at the rear. Air is scooped in and compressed by its own speed; fuel is injected and burned; the exhaust streams out the rear, providing a thrust like a rocket motor. The ram jet achieves speeds of 800 to 1500 miles per hour, but must be brought to high speed by "booster" devices before it can operate.

FIVE COLOSSAL STONE HEADS, one frowning and the others placidly viewing the world, have been brought to light in the jungles of southern Mexico. This archaeological find was discovered on the site of an Indian ceremonial center believed to have existed between 500 and 800 A.D. "Best group of monuments we have ever found," was the judgment of expedition leader Matthew W. Stirling of the Smithsonian Institution.

ALCOHOLICS may some day be able to use a treatment that will keep them from having "lost week ends." Dr. J. D. Reichard of the U. S. Public Health Service suggested to the American Psychiatric Association meeting that if a drug, such as amphetamine, can induce a change in mood and behavior in one type of mental patient, some other drug might be found to change the mood and behavior of the alcoholic. Search for this substance must be based, he said, on a better understanding of anatomy, chemistry, physics and physiology as they are related to human feelings and behavior.

SYNTHESIS OF CANE SUGAR for the first time has won the \$5000 Sugar Research Foundation Prize for Drs. W. Z. Hassid, M. Doudoroff and H. A. Larker of the University of California.

ATOMIC POWER PLANTS could be ready to serve industry "within two years of the time the problem is seriously attacked," says Dr. Leonard I. Katzin, one of the scientists who helped develop the atomic bomb.

SUSCEPTIBILITY TO DENTAL CARIES seems to run in a family, very likely is inherited and may be sex-linked, Dr. Henry Klein of the U. S. Public Health Service decided from a study of 1150 families of Japanese ancestry at the Colorado River Relocation Center.

HAYFEVER probably can be best controlled by chemical treatment of the allergy-producing weeds rather than treatment of the patient. Weed killer 2,4-D sprayed over areas infested with ragweed—chief cause of hayfever—will kill the plants before they shed any pollen if applied at a very early stage of flower development.

HEXAETHYL TETRAPHOSPHATE is a new insecticide uncovered by U. S. scientific field teams in Germany. The chemical, now being produced by Monsanto, kills aphids and mites that can survive DDT. Apparently superior in some respects to nicotine sulfate commonly used against these insects, the new insecticide will be particularly welcome since nicotine sulfate has been in short supply.

NUTRIENT X, an unidentified food factor, appears to have the properties of a vitamin and apparently plays an important part in the "palatability" of foods. Work is going forward in the U. S. Department of Agriculture and other laboratories to isolate and identify the substance or substances that constitute factor X.

STERILITY in men may be cured in certain cases

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NEW SULFONAMIDE PROMISING FOR INTESTINAL ANTISEPSIS

Clinical studies are now in progress which will confirm or deny evidence that 2-sulfanilamido-5-carboxythiazole may find a place among drugs used for intestinal antiseptics.

First synthesized about four years ago, this sulfonamide has been found to possess high antibacterial activity and is poorly absorbed from the gastrointestinal tract, thus resembling sulfaguanidine, succinylsulfathiazole and phthalylsulfathiazole. It occurs as white crystals, stable for at least two years in solid form. Since the sodium salts are highly soluble, effective concentrations in solution may be expected in the intestinal tract.

That there is little danger of crystals being deposited in the kidneys—a complication observed with some other sulfonamides—is suggested by the fact that any 2-sulfanilamide-5-carboxythiazole that is absorbed and possibly acetylated will be freely soluble in body fluids.

Reporting on pharmacologic and clinical experiments, Dr. Philip S. Winnek of the Pitman-Moore Co., Indianapolis, says that the compound showed appreciable activity *in vitro* against the colon-typhoid dysentery group of organisms, "being in general more active than sulfanilamide and sulfaguanidine, and in some instances equal to sulfapyridine, sulfathiazole, and sulfadiazine."

In vivo the effect on reducing the number of coli in the feces of dogs and man is called "very striking." The reduction of the number of coli appears to be more rapid and at a lower dose level than with succinylsulfathiazole or phthalylsulfathiazole, when compared with data in the literature.

Comparable results have been obtained by Harris and Finland, who found that in their hands 2-sulfanilamido-5-carboxythiazole was poorly absorbed, nontoxic, and effective against bacillary dysentery.

—*Science*, 103:720 (June 21), 1946

COUNTS 100 PILLS PER SECOND

An electronic device which counts and feeds tablets, pills or capsules to alternate packaging positions at rates up to 100 per second was demonstrated to pharmaceutical manufacturers at the 1946 Packaging Exposition by the Wilmotte Manufacturing Co. The device can be synchronized with automatic packaging equipment.

ADR

DENTAL REMEDIES RECENTLY ACCEPTED BY
A. D. A. COUNCIL ON DENTAL THERAPEUTICS

DENTIFRICES†

Irrizol Tooth Paste: Composition: See Milk-I-Dent Dental Cream. Manufactured and distributed by Trade Laboratories, Inc., Newark, N. J.

† *Accepted Dental Remedies*, Ed. 11, p. 93.

Not Acceptable

PETER PAUL'S CHARCOAL GUM

In a report which may be consulted in full in the July 1 issue of the *Journal of the American Dental Association*, the Council on Dental Therapeutics announces that Peter Paul's Charcoal Gum is not acceptable as a dental remedy. According to advertisements of Peter Paul, Inc., the chewing gum contains activated charcoal, which is described "as one of the most amazing purifiers known to science... almost magical in the way it adsorbs impurities... and helps remove tobacco and other stains from the teeth."

Chemists of the Council point out that, while activated charcoal has many uses, "evidence to show that it is a useful or desirable ingredient of chewing gum is totally lacking." The Council also concludes that incorporation of charcoal of any variety has not been shown to add to any cleansing effects which the chewing gum may exert.

MOUTH WASHES

Routine use of plain water or isotonic solution of sodium chloride as preferred mouth washes is recommended by the Council on Dental Therapeutics in a report which appears in the July 1 issue of the *Journal of the American Dental Association*. It is suggested that dentists obtain "medicated mouth rinse mixtures from the pharmacist, using and prescribing such mixtures only when necessary..." The objective is to help "the patient realize that mouth washes marketed indiscriminately are not known to be useful or necessary in the maintenance of oral or general health.

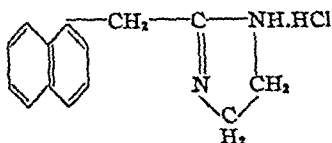
"The fact that many persons rely on medicated mouth washes when they should visit a dentist or a physician must result in numerous instances in serious delay in obtaining necessary treatment. For example, bad breath and sore throat are often symptoms of disease. The person who depends on mouth rinses to eliminate such symptoms or to prevent their development is fooling himself, perhaps to his own detriment."



PRODUCTS RECENTLY ACCEPTED BY THE
A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY

Council descriptions of drug products are published regularly in *This Journal* as they are accepted. Rules upon which the Council bases its action appeared in the July, 1946, issue (7:320, 1946) and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago.

PRIVINE HYDROCHLORIDE.—Naphazoline Hydrochloride.—2 (1-naphthyl-methyl)imidazoline hydrochloride.— $C_{14}H_{14}N_2.HCl$.—Molecular weight 246.73. The structural formula of privityne hydrochloride may be written as follows:



Actions and Uses.—Privine Hydrochloride is a vasoconstrictor, which, when applied to nasal mucous membranes, causes a prolonged reduction of the local swelling and congestion. It is of value in the symptomatic relief of disorders of the upper respiratory tract such as nasal congestion of allergic and inflammatory origin, acute and chronic rhinitis, vasomotor rhinitis and acute and chronic rhinosinusitis. Care should be exercised, however, when vasoconstrictors are used for prolonged medication; privityne hydrochloride is no exception, although the rebound congestion of the mucosa which it may cause can be alleviated within a few days simply by discontinuing all nasal medication. Those who respond with rebound congestion may tolerate solutions weaker than the commonly used concentrations. The site of action is possibly the peripheral sympathetic nerve endings, a property assumed for epinephrine, although further work is needed to clarify this point. So far, there have been no reports proving that sufficient drug is absorbed following local application to increase the blood pressure, although this possibility should not be forgotten.

Dosage.—Adults may use several drops of the 0.1 per cent or 0.05 per cent solution, depending on the relief obtained and the sensitivity of the individual mucosa. Relief can be expected for several hours. Occasionally a smarting sensation and sneezing may develop.

For children, the 0.05 per cent solution is suggested.

Privine hydrochloride solution is buffered to a pH of 6.2–6.3. It is affected by aluminum and should not be used in atomizers made of this material. Otherwise the preparation can be employed by any of the conventional methods.

Tests and Standards.—

Privine hydrochloride occurs as a white, odorless, crystalline powder possessing a bitter taste. It is freely soluble in water and in alcohol, very slightly soluble in chloroform and practically insoluble in benzene and in ether.

Privine hydrochloride melts between 255 and 260° C. A 1 per cent solution of privityne hydrochloride is clear and colorless; it has a pH of about 6.2 and responds to tests for chloride.

Place about 0.5 Gm. of privityne hydrochloride in a separator, add 25 cc. of water saturated with sodium chloride and 5 cc. of 10 per cent sodium hydroxide solution. Extract the mixture with five 15-cc. portions of residue-free ether; wash the combined ether extracts with two 5-cc. portions of water; filter, and evaporate the ether solution to near dryness on a water bath. Remove the remainder of the ether in a stream of warm air and dry the residue at 70° C.; the melting point of a portion of the characteristic crystalline residue is between 117 and 120° C.

Privine hydrochloride yields a mauve crystalline residue with Reinecke's salt precipitating at 193 to 196° C. with picric acid.

Dry about 0.5 Gm. of privityne hydrochloride, accurately weighed, for four hours at 70° C.; the loss in weight does not exceed 0.4 per cent. Incinerate about 0.5 Gm. of privityne hydrochloride, accurately weighed; the residue is not more than 0.2 per cent.

Transfer about 0.2 Gm. of privityne hydrochloride, accurately weighed, to a suitable Kjeldahl flask and determine the nitrogen content according to the method described in *Methods of Analysis of the Association of Official Agricultural Chemists*, fifth edition, page 26, art. 23: the amount of nitrogen is not less than 11.15 per cent nor more than 11.40 per cent when calculated to the dried substance.

Transfer about 0.2 Gm. of privityne hydrochloride, accurately weighed, to a 400-cc. flask and determine the chloride content according to the method described in *Methods of Analysis of the A. O. A. C.*, fifth edition, page 34, art. 49: the amount of chloride found corresponds to not less than 14.15 per cent nor more than 14.40 per cent when calculated to the dried substance.

Transfer about 0.2 Gm. of privityne hydrochloride, accurately weighed, to a separator, add 5 cc. of water to dissolve the salt and then add 10 cc. of normal sodium hydroxide previously saturated with sodium chloride. Extract the mixture with six portions (25, 20, 15, 10, 10 and 10 cc.) of ether; wash the combined ether extracts with two 5-cc. portions of water; extract the water washings with two 10-cc. portions of ether and combine these extracts with the main ether extract. Evaporate the ether solution, contained in an Erlenmeyer flask, to near dryness on a water bath and complete the removal of ether in a stream of cool air; add 10 cc. of neutral alcohol to dissolve the residue, dilute to about 50 cc. with water and titrate with twentieth-normal hydrochloric acid, using methyl red as the indicator. Each cubic centimeter of twentieth-normal hydrochloric acid is equivalent to 0.01234 Gm. of privityne hydrochloride; the privityne hydrochloride content found is not less than 97.0 per cent.

CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

Solution Privine Hydrochloride 0.1% (For Adults Only): 30-cc. and 480-cc. bottles. Each 100 cc. contains privityne hydrochloride 100 mg., exsiccated sodium phosphate 258 mg., sodium chloride 324 mg., potassium chloride 223 mg. and potassium bisphosphate 742 mg., preserved with merthiolate 1:100,000.

Solution Privine Hydrochloride 0.05% (For Children): 30 cc. and 480 cc. bottles. Each 100 cc. contains privityne hydrochloride 50 mg., exsiccated sodium phosphate 258 mg., sodium chloride 331 mg., potassium chloride 223 mg. and potassium biphosphate 742 mg. preserved with merthiolate 1:100,000.

Privine Hydrochloride Nasal Jelly, 0.05%: 20-Gm. tubes. Each 1 Gm. contains naphazoline

CITRATED NORMAL HUMAN PLASMA (See New and Nonofficial Remedies, 1945, p. 535).

The following additional dosage form has been accepted:

SAMUEL DEUTSCH SERUM CENTER, MICHAEL REESE HOSPITAL, CHICAGO

Normal Human Plasma (Citrated): 60-cc. bottles. Phenyl mercuric borate 1:15,000 is used as a preservative; contains dextrose in final concentration of 5 per cent.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 97).

The following dosage form has been accepted:

BARRY BIOLOGICAL LABORATORY, DIVISION OF BARRY ALLERGY LABORATORIES, INC., DETROIT

Solution Procaine Hydrochloride 2%: 30-cc. bottles. Each cubic centimeter contains procaine hydrochloride 20 mg., sodium chloride 4.4 mg., sodium bisulfite 1.0 mg. and 0.5 per cent chlorobutanol.

ESTROGENIC SUBSTANCES (See New and Nonofficial Remedies, 1945, p. 440).

The following additional dosage form has been accepted:

AYERST, MCKENNA & HARRISON, NEW YORK

Premarin (*Liquid*): 120-cc. bottles. Each 4 cc. contains 0.625 mg. of estrogenic substances (water-soluble) and 12.5 per cent alcohol.

PENICILLIN (See New and Nonofficial Remedies, 1945, p. 214).

The following additional dosage forms have been accepted:

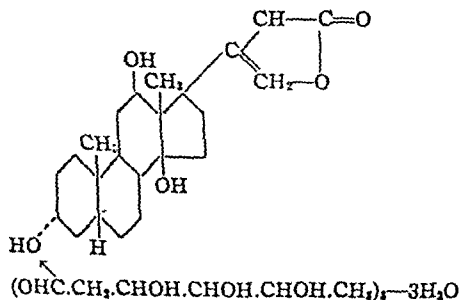
THE WM. S. MERRELL CO., CINCINNATI

Penicillin Sodium: 200,000 units.

E. R. SQUIBB & SONS, NEW YORK

Penicillin Sodium: 200,000 and 500,000 Oxford unit vials.

DIGOXIN.— $C_{41}H_{64}O_{14}$ (M. W. 780.92).—A crystalline glycoside which may be prepared from the leaves of *Digitalis lanata* or *Digitalis orientalis*. The crude diglanids from the leaves are separated by physical methods into diglanids A, B, and C. Digoxin is formed from diglanid C by hydrolytic removal of acetyl and glucose groups. It is standardized by chemical and physical methods and prescribed in terms of weight. The structural formula of digoxin may be represented as follows:



Actions and Uses.—The actions and uses are closely similar to those of digitalis U. S. P. As a purified substance it is claimed to have particular usefulness when rapid digitalization is necessary, usually within a few hours when administered by mouth and within a few minutes when given intravenously.

Dosage.—Before administering the usual dose of digoxin, it must be ascertained that no drug of the digitalis group has been given within two weeks.

For rapid digitalization by the oral route, an initial dose of approximately 0.75 to 1.5 mg. may be administered, followed by doses of 0.25 to 0.75 mg. at six-hour intervals until the ventricular rate lies between 60 and 70, or the maximum therapeutic effect is obtained, or toxic symptoms appear. Patients who have received digitalis therapy during the preceding two weeks are given 1 mg. or less as an initial dose.

Very rapid digitalization may be accomplished with an intravenous injection of 0.75 to 1.0 mg. Ventricular slowing usually begins within a few minutes and is maximal in one to two hours. If complete digitalization is not obtained after six hours, additional doses of 0.25 to 0.5 mg. of digoxin may be given intravenously at six-hour intervals.

For maintenance 0.25 to 0.75 mg. may be given daily by mouth, or 0.25 to 0.5 mg. may be given intravenously.

Digoxin injection is a tissue irritant and the contents of the ampul should be diluted with 10 cc. of sterile isotonic solution. The product should be injected slowly (five to ten minutes) and care taken to avoid extraveneous injection.

Tests and Standards.—

Digoxin occurs as a white, odorless crystalline powder, possessing a bitter taste (*careful*). When recrystallized from aqueous solution, it forms characteristic clusters. It is soluble in alcohol and pyridine, sparingly in chloroform, ether and water. It melts with decomposition at from 255 to 265° C. when placed in a bath previously heated to 250° C.

Dissolve 1 mg. of digoxin in 2 cc. of glacial acetic acid containing 0.01 per cent of ferric chloride and add 1 cc. of sulfuric acid to form a subjunct layer: a pure brown ring, free from red color, is formed at the junction of the liquids. In a short time the acetic acid layer acquires an indigo-blue color (Keller-Kiliani test for presence of digitoxose).

Reflux 0.1 Gm. of dry digoxin with 10 cc. of alcohol, 10 cc. of water, 0.98 cc. of hydrochloric acid (specific gravity 1.16) for one-half hour. Neutralize the solution to litmus paper with 1 normal sodium hydroxide and evaporate to 2 cc., in vacuum; filter, dry the residue, obtained at 25° C., and weigh (yield 45–46 per cent). When the residue is dried from alcohol-water, the melting point of the product is 213° C. Dilute the filtrate from the hydrolysis to 25 cc., add 0.04 cc. of hydrochloric acid (specific gravity 1.16) and heat on a steam bath for twenty minutes. Neutralize the solution to litmus paper with sodium hydroxide solution and evaporate to a thick syrup in vacuum.

Dry the syrup in vacuum over sulfuric acid and extract the residue three times with anhydrous acetone. Evaporate the acetone and dry the residue in vacuum at 80° C. If crystals are not formed, allow the syrupy residue to stand in an ice chamber until crystals separate: the isolated crystals of digitoxose melt at 109–112° C.

Dry 0.1 Gm. of digoxin in vacuum over phosphorus pentoxide for four hours: the loss in weight is not more than 0.5 per cent.

The crystallographic and optical properties of digoxin may be summarized as follows: The crystals belong to the triclinic system; their crystalline habit is platy to tabular with rhombic outline, characteristically appearing with one acute angle or corner truncated. The crystals are biaxial, positive, with moderate optic angle. The refractive indexes are $\alpha = 1.522$, $\beta = 1.550$ and $\gamma = 1.610$. Birefringence is positive ($\gamma - \alpha = 0.088$). Dispersion, $c > v$, weak.

BURROUGHS WELLCOME & Co., INC., NEW YORK

Tabloid Digoxin: 0.25 mg.

Solution of Digoxin, 0.05 per cent W/V: 30-cc. bottle. Each cubic centimeter contains 0.5 mg. of digoxin in 70 per cent alcohol solution.

Hypoloid Digoxin Injection, 0.05 per cent W/V: 1 cc. Contains 0.5 mg. of digoxin per cubic centimeter in 70 per cent alcohol solution.

THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1945, p. 388).

The following dosage forms have been accepted:

BARRY BIOLOGICAL LABORATORY, DIVISION OF
BARRY ALLERGY LABORATORIES, INC., DETROIT

Solution Aminophylline: 0.50 Gm. in 2-cc. and 20-cc. ampuls and 0.25 Gm. in 10-cc. ampuls.

G. D. SEARLE & COMPANY, CHICAGO

Aminophylline Suppositories: 0.50 Gm. Each suppository contains aminophylline, 0.50 Gm., incorporated into a suppository base consisting of a polyethyleneglycol of high molecular weight (Carbowax 4000 W) and propyleneglycol stearate (Emcol PS-50).

WYETH INCORPORATED, PHILADELPHIA

Suppositories Aminophylline: 0.5 Gm.

PENICILLIN (See New and Nonofficial Remedies, 1945, p. 214).

The following dosage forms have been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Penicillin Calcium: 100,000 and 200,000 Oxford unit vials.

BRISTOL LABORATORIES, INC., NEW YORK

Penicillin Calcium: 20-cc. vials. 100,000 and 200,000 Oxford units.

ASCORBIC ACID (See New and Nonofficial Remedies, 1945, p. 622).

The following dosage form has been accepted:

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Tablets Ascorbic Acid: 10 mg., 25 mg., 50 mg. and 100 mg.

PENICILLIN (See New and Nonofficial Remedies, 1945, p. 214).

The following dosage form has been accepted:

PREMO PHARMACEUTICAL LABORATORIES, INC., NEW YORK

Penicillin Sodium: Vials containing 100,000 Oxford units.

A REPORT OF THE COUNCIL

Potencies of Vitamin A Preparations.—From time to time the Council office has received inquiries from

manufacturers as to the acceptability of vitamin A preparations in dosages of potency ranging from 50,000 units to 150,000 units or more. The Council has previously accepted no dosage of potency higher than 25,000 units. The Council believes that this policy should be continued. In reaching this conclusion, the Council is not concerned with toxic effects of vitamin A from the administration of capsules of higher potency. This view is based on the fact that to encourage the use of very large doses of vitamin A would not be in the interest of good medical practice. If those interested in doing investigational work desire to experiment with daily dosages of the order of 50,000 to 150,000 or more units they may use multiples of a 25,000-unit dosage. The Council finds no justification for routine administration of doses in excess of 25,000 units per day.

THERAPEUTIC TRIALS COMMITTEE

Completion of plans to facilitate clinical investigation of drug products through a Therapeutic Trials Committee has been announced by the Council on Pharmacy and Chemistry (*J. Am. Med. Assoc.*, 131:596, 1946). Full information on the purpose, organization and procedures of the Committee is available in reprint form on request to the Council secretary.

Sixteen leading medical scientists compose the group which will function as a standing committee of the Council on Pharmacy and Chemistry. It will provide a medium for bringing together drug manufacturers and competent independent investigators, help to coordinate clinical research and facilitate the exchange of advice among those working in the same field. Researchers are promised freedom of investigation and publication of their results, with certain provisos. Reaction to the plan has been favorable as a means for improving and speeding proper evaluation of the many new therapeutic agents now being developed.

—R—

AIR TRANSPORT FOR DRUGS

New speed in the delivery of drugs and medical supplies was presaged by inauguration of air freight service undertaken jointly by the Railway Express Agency and Northwest Airlines on June 1, with drug manufacturers promising extensive use of the facilities.

Another variation of postwar air transport for pharmaceuticals was demonstrated when a drug-laden "sky train" took off from Philadelphia and arrived in Puerto Rico in time for delivery to pharmacists the next morning. The "sky train" consisted of a Douglas C-47 towing a glider, both of which carried cargo.

Colleges

Dr. Ernest Little, recently retired dean of the Rutgers University College of Pharmacy, has been awarded the first Oscar Singer Memorial Medal by the New Jersey Pharmaceutical Association. The award is made for outstanding achievement in promoting the welfare of New Jersey pharmacy.

Dr. Charles F. Poe, professor of chemistry at the University of Colorado, has been named dean of the University's College of Pharmacy. During the war Dr. Poe served in the Quartermaster Corps, holding the rank of colonel. He has earned recognition in both Army and civilian life for his work in food and drug chemistry. Dr. Poe replaces former Dean Homer C. Washburn.

Dr. Arno Viehoveer, former faculty member at the Philadelphia College of Pharmacy and Science, has been appointed technical consultant for the government to coordinate an investigation of the German pharmaceutical industry. He has also served with

the Coordinator of Inter-American Affairs, Foreign Economic Administration and as technical adviser to the Siamese government.

Dr. Edward A. Brecht, Jr., member of the National Formulary Committee, has resigned his position at the University of North Carolina College of Pharmacy to join the faculty of the University of California College of Pharmacy.

Prof. Curt P. Wimmer, associated with the Columbia University College of Pharmacy for forty years, has been designated Professor Emeritus of Pharmacy.

Dr. C. Lee Huyck has been appointed professor of pharmacy to succeed Prof. Wimmer at the Columbia University College of Pharmacy. A. Ph. A. member Huyck has held several teaching posts, served as research chemist with Wm. S. Merrell Co., and more recently was senior pharmacist with the Winthrop Chemical Co.

Dr. Elbert Voss, formerly of the University of Wisconsin, has been appointed associate professor of pharmacology at the University of Oklahoma School of Pharmacy.

Mary Postizzi, recent graduate of the University of Connecticut College of Pharmacy and past-president of the A. Ph. A. student branch there, has joined the faculty as assistant instructor in chemistry.

NEW BUILDING FOR TEMPLE PHARMACY SCHOOL

WORK has begun on remodeling the spacious building that will be the new home of the Temple University School of Pharmacy. Built within the last fifteen years in downtown Philadelphia, the structure was obtained recently from the Federal government. Dean H. Evert Kendig announces that the new facilities should be ready for the September, 1947, term, when an enrollment of 400 students will be accepted. Plans are also under way for a graduate school of pharmacy.

On the first floor there will be a reception room and lounge with a tile floor and decorative pool, administrative offices for Dean Kendig and his staff, pharmacy museum, large library and book bindery, and auditorium seating 800.

The building's 200,000 square feet of space will be shared with the School of Dentistry, which will principally occupy the second floor. The Pharmacy School will also be located near the Temple University Medical School and Hospital.

The third floor includes pharmacy lecture rooms, all equipped for audio-visual education. Here also will be seminar rooms, laboratories and auxiliary rooms for research projects.

There will also be laboratories on the fourth floor, together with additional classrooms and a pilot manufacturing laboratory. Facilities include a student cafeteria and faculty dining room.

A number of units have been set aside for the graduate school, and Dean Kendig points out that the spacious building will permit expansion as needed.

NEW TEMPLE PHARMACY-DENTAL BUILDING



A. Ph. A.

Branches

LOCAL BRANCHES

MICHIGAN—Don E. Francke has been elected president of the Branch for the coming year. Other officers are Eston P. Stout, vice-president; R. W. Klein, treasurer; Bernard A. Bialk, secretary; Belle Moskowitz, assistant secretary; and Ernest R. Jones, chairman of the Program Committee.

NORTHERN CALIFORNIA—At a meeting held in conjunction with the convention of the California Pharmaceutical Association, Dr. Windsor Cooper Cutting of the Stanford Medical School spoke on "New Drug Therapy." Dr. D. Harold Copp, University of California Department of Physiology, spoke on "Medical Aspects of Nuclear Physics." Dr. George A. Moulton, president of the AMERICAN PHARMACEUTICAL ASSOCIATION attended the meeting and discussed activities of the ASSOCIATION.

At the May meeting of the Branch, L. W. Varblow of McKesson & Robbins spoke on "Pharmaceutical Manufacturing." He outlined the changes that have taken place in pharmaceutical manufacturing since 1850 and stressed the important part the Food and Drug laws have played in improving standards.

NORTHWESTERN OHIO—The second annual banquet of the Branch was held on May 22. Prof. John Schwarz of the Department of History at Bowling Green State University was the guest speaker. Eugene Imholt, Branch president reported on organizational activities of the past year.

BALTIMORE—Dr. Robert P. Fischelis, A. Ph. A. secretary, spoke at a well-attended meeting held at the School of Pharmacy, University of Maryland, on June 13. The subject of his talk was "Pharmacy in the Affairs of the Nation." W. Arthur Purdum presided at the meeting.

STUDENT BRANCHES

ST. JOHN'S UNIVERSITY—Types and uses of atomizers and inhalant nebulizers were discussed by a representative of the DeVilbiss Co. at the May 20 meeting of the Student Branch.

Officers have been elected for the coming school year. Due to a tie for the presidency, it was decided that Edward Chudnofsky would head the Branch until his graduation in February, 1947, with Irving Katz, the other candidate, to serve as president for the remainder of the year. Milton Chaite is the new vice-president; Sister Rose Dominici, secretary; and Philip Grob, treasurer.

UNIVERSITY OF KANSAS—The newly organized Student Branch at the University of Kansas has held its first election of officers, naming Ralph L. Miller as president; C. Warren Plummer, vice-president; Patti Sue McClatchey, secretary; and Alvin M. Johnson, treasurer.

BUTLER UNIVERSITY—"Now for Tomorrow," a sound film in color, was presented by Owens-Illinois Glass Company at a recent meeting of the Student Branch.

SOUTHERN COLLEGE OF PHARMACY—New officers of the Student Branch are Bryant C. Brady, president; and June Snoddy, secretary.

MONTANA STATE UNIVERSITY—Thomas Hodsdon was recently elected president of the student branch. Marguerite Bean is the new vice-president; Ruth Peterson, secretary; and Dorothy Kirscher, treasurer.

ATTEND THE CONVENTION

1946		AUGUST					1946	
SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.		
.	.	.	.	1	2	3		
4	5	6	7	8	9	10		
11	12	13	14	15	16	17		
18	19	20	21	22	23	24		
25	26	27	28	29	30	31		

Typical Days

FROM THE SECRETARY'S JUNE DIARY

—3rd—

TODAY came officers of the A. Ph. A. Sections and of the Society of Hospital Pharmacists, College of Apothecaries and Institute of the History of Pharmacy to discuss coordination of the program for the week of August 25. Among those present were Hill, Selby, Wyss, Hazleton, Ray Kelley, Stoll and Stephen Wilson. Absence of the invited representatives of the Secretaries' Conference was noted with regret. Splendid progress was made in coordinating time schedules as well as subject matter and all cooperating beautifully.

At night to dinner with Pittsburgh Convention Secretary Stephen Wilson at the Willard reviewing details for the coming meetings which he and the local committee have well in hand.

—4th—

Today a meeting at A. Ph. A. Headquarters of the Drug Trade Conference Committee on Uniform Laws with Schlotterer, Barta, Hammer, Frailey, Newcomb and Hayman all making splendid contributions to the objective, which is uniformity in all legislation affecting pharmacy. A fine group to preside over. Conclusions reached on barbiturate regulations, veterinary remedy acts and caustic poison acts. Dates set for further meetings to settle the more controversial questions dealing with pharmacy laws and sales limitations. After the meeting enjoyed showing Newcomb, who did so much to help raise funds for this building, the latest developments in its upkeep and use. Late at the office finishing important routine and then on the 8:30 p. m. train to Columbus, O.

—5th—

Arriving on time at Columbus and greeted by M. N. Ford at the Neil House where the Ohio State Pharmaceutical Association was in session and moving along on schedule. A conference with Fraiberg, Wyss, Matousek and other Cleveland Branch members discussing local branch problems and then to lunch at the Deshler with Fraiberg and Ford, re-

turning in time to the convention hall for the half-hour talk on "The Pharmacist's Responsibility in the Distribution of Drugs." And there were many questions from the floor which indicated special interest in the prescription warnings.

Later a long talk with Dean Christensen on many matters dealing with the A. Ph. A. convention. After viewing the well-arranged drug exhibit with Pharmacy Board Secretary Ford, rushed off to make the 5:30 p. m. train for Atlanta. Much credit to Vic Keys for a smooth-working and well-programmed convention which kept him and his members busy and well informed throughout.

—6th—

Reached Atlanta shortly after noon and met at the Biltmore Hotel by Charles Evans, Russell Rainey, Dean Wilson and by Harold Darnell of Indiana who was also a speaker on the program of the Association of Food and Drug Officials of the United States. Much conversation on the Veterans Administration contract for pharmaceutical service and found these men enthusiastic and eager to help in working out a satisfactory program.

At 2:00 p. m. addressed the Association of Food and Drug Officials of the United States on the barbiturate question, surprising some of them with the evidence of lack of uniformity in state regulations on the subject. Later a long conference on many topics of mutual interest with Commissioner Dunbar and State Cooperation Director Queen, and secured Dr. Dunbar's promise to appear at the House of Delegates' meeting in Pittsburgh to discuss the application of the Federal Food, Drug and Cosmetic Act to retail pharmacy. Sorry to have to leave the annual dinner of this association in time to board the 8:30 p. m. train for Washington.

—7th—

Directly from the train at 2:00 p. m. to the headquarters building and found the desk piled high as usual, but yielding to cooperative treatment by the staff even though it was the last working day of the week. Now looking forward to a good night's rest after three nights on the sleepers.

—8th—

This was no "Saturday off," for there was work to do on a Council Letter and other important documents. The telephone busy much of the afternoon conversing with Council Chairman Beal, Treasurer Schaefer, Finance Committee Chairman Swain and with Commander Briggs who is making good progress in obtaining a V. A. allowance to enable state associations to employ necessary clerical help for

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carrying out the prescription service plan for veterans.

—9th—

Again breaking the Sabbath to be ready for the meeting of the legislative committee tomorrow, which will take definite action on the barbiturate problem. A quiet day at the office with much additional routine disposed of, and then to a fine home-cooked dinner with Captain and Mrs. Deibert at their home in the hills of Arlington.

—10th—

A good attendance of the Committee on Legislation including Martin Adamo, Swain, Kantner and Hugo Schaefer; joined by Dr. Austin Smith and J. W. Holloway of the A. M. A. Unfortunately Chairman Winne was unable to attend because his state convention was in session; so reported for him on the barbiturate survey and proposed provisions of a uniform state bill. As the sections of the bill were given consideration seriatim it became evident that American medicine and American pharmacy will have no difficulty in reaching agreement on what shall constitute a uniform state act. A day well spent in the interest of medicine, pharmacy and the public.

—11th—

All day catching up with the accumulated routine and answering questions on matters of policy for the staff. To dinner at the Statler with J. J. Clark discussing most recent developments in surplus drug selling. Then back to the office to finish some pending problems dealing with ASSOCIATION finances, in company with Paul Nowell.

—12th—

All day at the desk with many a telephone call and discussing the Secretaries' Conference program with Secretary Clara Miller by long distance telephone.

—13th—

Much routine disposed of and final check made of the work of the stone masons who have been busy around the building for many weeks. Also giving final approval to furnishings for the recreation room for our women staff members and hoping that the A. Ph. A. Women's Auxiliary will like what we have done sufficiently to want to sponsor this activity.

A long session with the attorney who is drafting the Uniform State Barbiturate Bill now that the principles have been agreed upon. Via telephone comes a message giving advance notice that President Truman expects us to act as an adviser to the U. S. Delegation to the International Health Conference beginning June 19 in New York City.

At 5:00 p. m. on the train to Baltimore meeting Baltimore Branch officers Purdum, Balassone, Hager, Black, Du Mez, Kantner and other Baltimore pharmacists who had arranged a dinner prior to the meeting of the Branch, which we addressed on "Pharmacy in the Affairs of the Nation." A good attendance at the College of Pharmacy and met many old and new Baltimore friends who listened respectfully even though the night was hot and humid. Back to Washington by midnight.

—14th—

During the morning a private showing of the Owens-Illinois film "Now For Tomorrow," which did not appeal particularly to the staff whose eyes are on the development of pharmacy as a profession and not as a trade. Later joining a meeting of the steering committee of the Committee on Status of Pharmacists in Government Service with Einbeck, Du Mez and Frates in attendance. Lunching at the building and working late with Lawyer Williams on the draft of a barbiturate bill.

—15th—

All this Saturday morning at the office and then on the noon train to spend the week end at home.

—16th—

On the return trip to Washington found George Merck as a fellow passenger bound for important conferences in high places the following day. It is fortunate for the government that there are still some high-powered industrialists willing to give time to aid their government.

—17th—

An unusually busy day even for a Monday because office hours had to be cut short so we could leave with the U. S. Delegation to the International Health Conference. Much telephoning and conferring on last-minute details with the staff and a protracted conference with Guy Warfield on the A. Ph. A. employees' retirement plan.

At 4:00 p. m. on the *Congressional* to New York, meeting and conferring enroute with the U. S. delegates and advisers to the International Health Conference; arriving in the early evening at Hotel Astor which will be U. S. delegation headquarters, although some distance from United Nations meeting facilities at Hunter College.

—18th—

All day in the preliminary sessions of the U. S. delegation reading and studying manuscripts, instructions and rules of procedure and obtaining a general orientation in preparation for the official opening of the conference tomorrow. Fortunate to spend the night at Red Bank which is only fifty miles from New York.

—19th—

An early morning meeting of the U. S. delegation for final instructions and discussion. At 3:30 p. m. to the official opening of the International Health Conference temporarily housed at the Henry Hudson Hotel because United Nations headquarters are completely taken up with the Atomic Bomb Commission, the Economic and Social Council and other activities lasting beyond anticipated expiration dates.

It was an impressive sight to find the delegates of 51 nations gathered in one small place eager to discuss their health problems, and representatives from 16 more on the way, having been held up by transportation difficulties. All speakers emphasized the great opportunity of this International Conference to not only accomplish its own purpose but to furnish the medium for better international understanding;

on many related problems. At night to meet Council Chairman Beal at the Chemists' Club for a review of A. Ph. A. activities and convention plans while Conn and Louis were "fighting" under the flood lights a few miles away.

—20th—

Further sessions of the International Health Conference and finding Surgeon-General Parran of U. S. P. H. S. easily the most popular and respected international figure at the Conference, which fact was reflected in his unanimous election as its president. Returned to Washington on the *Congressional* and spent the evening hours catching up.

—21st—

Late in the morning conferring with Watson Davis and Science Service staff member on the possibility of A. Ph. A. cooperation in supplying pharmaceutical information to South American publications. Keen interest in current drug problems brings many a request for information from sources which completely ignored pharmacy in earlier days.

—22nd—

Much routine activity and, after luncheon with the staff at the favorite nearby Virginia Hot Shoppe, a long session with the attorney who is making good progress in drafting the uniform barbiturate act, spoiling a Saturday afternoon but glad to see this problem nearing solution.

—23rd—

After Sunday morning spent in the office, reached home in time for dinner and a restful evening on the banks of the Shrewsbury River.

—24th—

Early to the International Health Conference which continues in New York, finding the delegates eager to curb unnecessary conversation and get down to the real business. Slow progress because all speeches must be translated into English and French, which are the official languages. Marveling at the work of the translators and interpreters whose memories and linguistic facilities are equally good. At night to the Chemists' Club for dinner with Treasurer Schaefer, disposing of much A. Ph. A. business.

—25th—

After a morning session with the U. S. Delegation and some committee work, attended the 40th Anniversary Celebration of the passage of the Federal Food and Drugs Act of 1906 at the New York State Bar Association building with Charles Wesley Dunn presiding. To luncheon at the Lotus Club with United Drug Co.'s Edward C. Merrill as genial host and Justin Powers, Caspari and Delebanty as fellow guests. Then back to the F. & D. meeting where Surgeon General Parran delivered one of the major speeches of the day. After dinner to the final session where Parran presided and good speakers held forth; but the attendance had dwindled as might be expected with three long sessions on the same subject.

—26th—

Most of the morning and afternoon at plenary sessions and committee meetings of the Inter-

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each Linguet contains
5 mg. methyltestosterone.



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R.D.2.

PHARMACIST HAS SILVER STAR FOR GALLANTRY IN ACTION

Pharmacist Gallio J. Marzano of Terminal Island, Calif., a member of A. Ph. A., received the Silver Star for his "devotion to duty, courage and disregard for personal safety" in action with the 11th Armored Division near Lavassalle, Belgium. On one occasion Lt. Marzano, while serving as an assistant battalion surgeon, "moved under artillery fire to a tank that had been hit where he removed the dead and wounded and administered first aid," his citation states.

"On 1 January 1945, the battalion suffered numerous casualties in boggy terrain. Evacuation vehicles being unable to reach the wounded, Lieutenant Marzano organized available tanks under heavy artillery and small arms fire and moved the men to safety."

WARNING ISSUED ON CONTENT OF AEROSOL INSECTICIDES

Pharmacists should be certain to check the composition of aerosol insecticides before stocking them, in view of warnings issued by the U. S. Department of Agriculture. This type of insecticide has become popular with civilians, after having proved its worth in the Army's aerosol "bombs."

To date the Department's Bureau of Entomology and Plant Quarantine has approved no formula for use by the general public of an aerosol

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"On 1 January 1945, the battalion suffered numerous casualties in boggy terrain. Evacuation vehicles being unable to reach the wounded, Lieutenant Marzano organized available tanks under heavy artillery and small arms fire and moved the men to safety."

WARNING ISSUED ON CONTENT OF AEROSOL INSECTICIDES

Pharmacists should be certain to check the composition of aerosol insecticides before stocking them, in view of warnings issued by the U. S. Department of Agriculture. This type of insecticide has become popular with civilians, after having proved its worth in the Army's aerosol "bombs."

To date the Department's Bureau of Entomology and Plant Quarantine has approved no formula for use by the general public of an aerosol

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containing more than 3% DDT. Aerosols with a larger amount of DDT may be harmful to humans and not any more effective against the flying insects for which they are intended. Labels which indicate that the aerosol has been manufactured under a license issued by the Department assure a purchaser that the formula also has been approved by the Department.

After a great amount of experimentation to arrive at a proper and safe formula for the aerosols, entomologists found that the gas should contain pyrethrum for most effective use against insects. However, many brands offered now con-

tain small amounts of DDT in addition to the pyrethrum.

Such aerosols, containing pyrethrum with small amounts of DDT, or containing pyrethrum alone, are nearly perfect for use in enclosed places as killers of mosquitoes, flies, and other flying insects. Aerosol insecticides were designed specifically for this type of use. While an aerosol will kill many crawling insects its use against them is wasteful and uneconomical. The Bureau suggests that other insecticides be used for the control of household insects such as cockroaches, ants, or bedbugs.

STREPTOMYCIN CAN INCREASE INFECTIVITY

DEATHS from infection in mice increase rather than decrease when streptomycin is given at certain dosage levels. This puzzling effect, which has important implications, has been reported by Dr. Henry Welch and co-workers at the Food and Drug Administration. There seemed to be "no adequate reason" why such an effect cannot also occur in man.

"If such is the case," Dr. Welch observed, "the problem of proper dosage with this antibiotic is magnified tremendously The deduction that improper dosage schedules in conditions for which this drug is now being used may lead to undesirable results is entirely logical."

It is likewise logical, the report emphasized, that by recognizing this peculiar phenomenon and adjusting treatment schedules accordingly clinical cures might be achieved in conditions which now appear resistant to streptomycin.

To date the drug has been used with success in the treatment of hemophilus influenzal meningitis, tularemia and Gram-negative urinary tract infections. In the treatment of other diseases, such as typhoid fever and undulant fever, results have been unexplainably erratic. Against these latter two diseases, streptomycin is effective *in vitro*; but when given to patients, some are cured while others do not respond even to relatively large doses. In some instances physicians can suggest no satisfactory explanation of the failure.

A possible answer is the finding of the Food and Drug Administration that under certain conditions streptomycin actually increases the infectivity of the organism against which the drug is used. This discovery came about through puzzling inconsistencies in results from laboratory tests on streptothricin, a drug closely related to streptomycin. Laboratory workers observed that relatively high concentrations of the drug

did not interfere with the activity of *Staphylococcus aureus* as much as somewhat lower concentrations did. Substituting streptomycin for streptothricin, and using *E. typhosa* for the test, they obtained essentially the same results.

To check this disquieting information further, Dr. Welch and his associates turned to experiments on mice. The mice were infected with typhoid, then given streptomycin by injection.

Starting with a low dose it was found that, up to a certain point, stepwise increases in the dose actually cause comparable increases in the number of mice that succumb to the infection. Within this particular dosage range the fatality rate for mice is higher than when none of the drug is administered. As the size of dose is further increased, the number of fatalities then begins to drop. When the dose is sufficiently high streptomycin protects the mice against typhoid infection and no deaths occur.

The dosage range that embraces both the disease-stimulating and the therapeutically effective concentrations was found to lie within relatively narrow limits. Moreover, the concentrations of the drug produced in the blood are the ones usually found in the blood of man at some time during treatment with streptomycin.

Experimental data indicate that repeated tests, employing more than 2000 mice, always gave similar results.

Although Dr. Welch suggests several possibilities as to why streptomycin, at certain dosage levels, increased rather than decreased the fatality rate in mice, the facts now available do not permit a definite explanation.

Preliminary studies indicate that a similar phenomenon may be demonstrated with penicillin, although at a different dosage level.

Collaborating with Dr. Welch in the investigations are Drs. C. W. Price and W. A. Randall.

SUGGESTS FORMULATION FOR TREATING DIARRHEA

Because of the Narcotic Bureau's appeal for conservation of narcotics, Pharmacist Ralph W. Englehardt of the Rochester State Hospital has devised the following formula to replace the favorite combination of paregoric and milk of bismuth for cases of diarrhea:

Pectin.....	8
Glycerin.....	10
Syrup.....	40
Benzoic acid.....	1
Water, hot.....	100
Amyl acetate.....	0.3
Alcohol.....	3
Amaranth solution.....	0.67
Magma bentonite, <i>q. s. ad.</i>	1000

Rub the pectin with the glycerin, add the syrup, then incorporate quickly, with vigorous stirring, the benzoic acid which has been dissolved in the hot water. To this add the amyl acetate dissolved in the alcohol, then add the amaranth, and finally the bentonite. The product may be homogenized, although this is not necessary.

As used in the Rochester State Hospital, 1 or 2 ounces is given orally after each bowel movement. Each ounce contains bentonite 1.25 Gm., and pectin 0.24 Gm.

U. S. P. TRUSTEES MEET IN NEW HEADQUARTERS

Plans looking to publication of U. S. P. XIII before the end of the year, and the charting of a comprehensive program upon which to base admissions for the following revision, U. S. P. XIV, were among the subjects discussed at the recent meeting of the U. S. P. Board of Trustees. This was the first meeting to be held at the new U. S. P. headquarters, 4738 Kingsessing Ave., Philadelphia.

Robert L. Swain of New York and Adley B. Nichols of Philadelphia were re-elected by the Board as chairman and secretary, respectively, for the coming year.

Consideration was given to having U. S. P. XIII translated into Spanish. A number of Spanish-speaking nations now recognize the Spanish edition as their official Pharmacopœia, and others are considering similar adoption.



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of Trust*

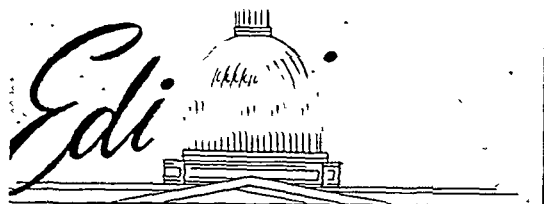
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APPEAL INDICATED

LAST November a "supermarket" type of department store in Hackensack, N. J., applied to the Board of Pharmacy for a permit to conduct a pharmacy, including the compounding of prescriptions. Previously the store operated under an "amended permit" issued in 1934 when the New Jersey permit law went into effect.

The amended permit was devised by the Board to avoid controversy with department stores which were in business at that time. Many of these places employed licensed pharmacists to supervise the dispensing of such drugs, medicines and poisons as were sold. No department store in the state was engaged in compounding prescriptions.

By this device the Board accomplished several things. It discouraged the compounding of prescriptions in establishments that were not primarily pharmacies. It took away no privilege then enjoyed by any establishment employing a licensed pharmacist. It gave protection to the public by continuing an adequate control over the sale of drugs, medicines and poisons in original packages, without subjecting the public to the possibility of danger from prescriptions and medicines compounded in places that are not adequately prepared by physical equipment or professionally minded personnel to attempt such service.

When the owner of the Hackensack department store decided to include prescription compounding in his "supermarket" operation, he applied for an unamended permit. The Board of Pharmacy refused to grant the request. Then the "supermarket" operator appealed to the Supreme Court of New Jersey for a review of the case, and the writ of certiorari was granted.

In the argument on the case it developed that no hearing had been granted by the Board, because it had not been specifically requested by the applicant, and that no inspection of the store was made in connection with this application. However, it was also shown that the Board knew the details of the establishment through previous inspections. The Court reversed the Board in deciding the case, indicating that there had been an abuse of the discretion vested in the Board by law for the granting of permits. It characterized one of the grounds for the denial of the permit—namely, that four violations of the pharmacy act had occurred in the store over a period of eleven years—as "flimsy, arbitrary and tenuous."

There is a lesson in this decision: Boards of Pharmacy should offer hearings whenever they are called upon to make a decision involving the grant-

ing or withholding of a permit and there is a possibility of legal action following the decision. This lesson should be heeded by all administrative bodies having discretionary powers of this kind.

The important point about the decision is that nothing in its wording denies the right of the Board of Pharmacy to exercise discretionary power in the granting of permits. Nor is there anything in the decision that questions the right of the Board to rely on a device such as the amended or "limited" permit. The entire basis for the decision against the Board is the opinion of the judges that the discretion exercised was unreasonable.

Before this decision is accepted as final it should certainly be appealed to the Court of Errors and Appeals, the highest court in New Jersey. If there is sufficient cause following the decision of the Court of Errors and Appeals for an appeal to the Supreme Court of the United States this should be entertained. The nature of the present decision is vital. Its consequences are far reaching.

THE NEW N. F.

WITHIN a few weeks the new National Formulary will begin appearing in pharmacies throughout the country. To a tradition-bound pharmacist it may come as something of a shock, despite published discussions of new style and arrangement and extensive revision. To the progressive pharmacist it should be a pleasant surprise.

The Committee on National Formulary has carefully weeded out stunted or moribund members of the drug kingdom. Continuing a persistent trend, there is a particularly precipitous drop in the number of botanicals, with a compensatory increase in organics. This is also reflected in the field of preparations, where the period of fluidextracts, tinctures and other extractives is obviously and rapidly drawing to a close.

Among new admissions to N. F. VIII are a number of additional formulas that the pharmacist will find practical at the prescription bench. Scanning the N. F. index will reveal the falseness of the comment occasionally heard from therapeutic nihilists that it was somewhat of a graveyard for outmoded drugs.

The announcement some time ago that English titles would be given the primary position in the monographs stirred up an amazing amount of heated discussion. We have always backed the N. F. Committee on this point, as well as the U. S. P. Revision Committee. We believe that most pharmacists will consider the new arrangement a sensible and logical step when they have used it in practice.

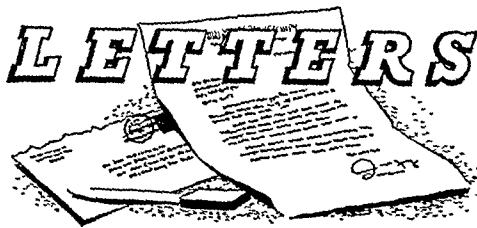
All in all, the Committee on National Formulary, so ably headed by Dr. Justin L. Powers, is to be complimented on a job well done. The members of the AMERICAN PHARMACEUTICAL ASSOCIATION may well be proud of this contribution to the profession and to public health.

Sirs:

...Last week the California State Pharmaceutical Association convention was held in San Francisco, at which George Moulton was one of the guest speakers. I am confident that his trip to the coast meant a great deal, and I hope that future presidents will continue to make a tour of the country while they are in office. I have the impression that a great deal of good was accomplished and that he served as an effective ambassador of good will for the ASSOCIATION.

San Francisco, Calif.

TROY C. DANIELS



Sirs:

...I am happy and proud to receive a Life Membership card in the AMERICAN PHARMACEUTICAL ASSOCIATION.

Our state association officers and all members in attendance at the state convention greatly enjoyed meeting President Moulton. I am sure that his fine address to our Association highlighted the entire meeting. President Moulton made many new friends for the A. Ph. A., and I hope we will be able to interest many of our members to also become members of the ASSOCIATION.

Salt Lake City, Utah

J. B. HEINZ

Sirs:

We have just concluded a very successful meeting of the Washington State Pharmaceutical Association, to which the AMERICAN PHARMACEUTICAL ASSOCIATION contributed a good deal by making it possible for President George Moulton to be present.

...As you know, only a few pharmacists actually get in contact with their national ASSOCIATION. I think it is highly desirable that the rank and file of pharmacy throughout the country become more familiar with the workings, the importance, and the leadership of its national organization.

Dr. Moulton has pointed the way that will prove to be beneficial to all concerned....

Pullman, Wash.

P. H. DIRSTINE

Sirs:

Our Association has recently concluded its 29th annual convention, and it was considered to be one of the most successful conventions in the history of the Wyoming Pharmaceutical Association.

We want to tell you how much Dr. Moulton's address meant to the members. His address was very well accepted. After the fine coverage of the topics he discussed, I know we all have a better knowledge....

Casper, Wyo.

JOHN B. TRIPENY

Sirs:

Speaking as a retail druggist, and in behalf of pharmacy of New Mexico—and speaking frankly—a year ago I hardly knew that the AMERICAN

PHARMACEUTICAL ASSOCIATION existed. This is not because we were uninterested. But during this past year we have come to realize that every pharmacist is vitally affected daily by the fine work of your organization.

You sent your president to visit our convention.

We were honored and were convinced of the practical importance of the AMERICAN PHARMACEUTICAL ASSOCIATION... As a result of Dr. Moulton's visit, the New Mexico Pharmaceutical Association is sending me to the Pittsburgh convention. The State Board is sending its secretary and inspector, and of course our College is sending its dean.

Albuquerque pharmacists are now attempting to establish an A. Ph. A. branch. We pledge our support to this branch....

Albuquerque, N. Mex.

ROBERT D. SASSER

Sirs:

We are deeply grateful to Dr. Moulton for his personal visit to the Minnesota meeting and appreciate his splendid address before the members. A resolution passed at the close of the meeting reads:

"WHEREAS individuals, organized groups, associations and others have been of material aid and assistance to the association in the program of this 62nd annual meeting and in rendering service to its members and to pharmacy in Minnesota and the nation, therefore be it

Resolved that the thanks of the Minnesota State Pharmaceutical Association be extended in writing to the AMERICAN PHARMACEUTICAL ASSOCIATION, its president, Dr. George A. Moulton, and its secretary, Dr. Robert P. Fischels, for their work in the national pharmacy picture in behalf of Minnesota pharmacists and to the latter association for sending the *Practical Pharmacy Edition* of the JOURNAL to dues-paid members of the Association "

St. Paul, Minn.

W. M. THOMPSON

Sirs:


...Dr. Moulton was present with us throughout our recent meeting. After our final adjournment he sat in with the new Executive Committee and shed considerable light on the subject of the Veterans' Administration.

Denver, Col.

CHARLES J. CLAYTON

A Ph. A.'s thanks to everyone who so cordially welcomed President Moulton during his tour, and to all those who have written us concerning the helpfulness of his visit—THE EDITOR

STRAIGHT FROM HEADQUARTERS



by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

INTERNATIONAL AFFAIRS

THE International Health Conference has concluded its meetings. Out of it came a charter for a World Health Organization which should be acceptable to the 51 nations entitled to vote on its provisions. An interim commission will function until the nations can review and sign the charter. This commission will take over at once the health functions of the League of Nations, thus assuring continuity of effort along lines of established cooperation between the nations in matters of sanitation, quarantine, control of narcotic drugs, and the establishment of international drug standards in general.

The proposed constitution of the World Health Organization includes among its functions the development, establishment and promotion of international standards with respect to food, biological, pharmaceutical and similar products.

Furthermore it provides that the Health Assembly of the World Health Organization shall have authority to adopt regulations concerning "standards with respect to the safety, purity and potency of biological, pharmaceutical and similar products moving in international commerce." It also provides that the Health Assembly shall have authority to adopt regulations concerning "advertising and labeling of biologicals, pharmaceuticals and similar products moving in international commerce."

Regulations adopted by the Health Assembly come into force for all members of the World Health Organization after due notice has been given of their adoption, except for such members as may notify the Director General of the W. H. O. of rejection or reservations within the period stated in the notice.

The United States played a very important role in the organization of this International Health Conference and in its final accomplishments. Surgeon General Thomas Parran of the U. S. Public Health Service was the unanimous choice of the delegates for the office of chairman of the Conference and, again, he was asked to accept the chairmanship of the Interim Commis-

sion, which he declined. As the activities of the United Nations progress, it is certain that the organization of the World Health Organization will be considered among its major accomplishments.

The United States will undoubtedly play a dominant role in world health affairs, and pharmacy will be a large contributor to the development of a program that will extend the full benefit of modern scientific achievements in the health field to the individual citizens of all nations.

The AMERICAN PHARMACEUTICAL ASSOCIATION looks forward to making its contribution, not only to the progress of international cooperation in pharmaceutical matters but also to world health affairs in general.

A. PH. A. PROGRESS

BY the time this issue of the JOURNAL reaches our readers, the 1946 convention of the AMERICAN PHARMACEUTICAL ASSOCIATION will be a part of the long history of our organization. It was the ninety-second meeting held in the ninety-four years of the existence of the A. Ph. A., and it brought together a larger number of its members than have ever gathered anywhere for an annual meeting. This is a safe statement even though it is being made before the convention, because advance reservations at various Pittsburgh hotels indicate that the registration of members, their families and guests will exceed one thousand.

As far as the headquarters office of the ASSOCIATION is concerned, it can be said that the ASSOCIATION year (not the fiscal year) which ends with the 1946 convention was the busiest year in the headquarters building. More staff members have been engaged in the work of the ASSOCIATION than ever before, the full-time staff numbering 25 or more. More new members have joined the ASSOCIATION than ever before.

As of August first the total membership count is well over 10,500, and it is anticipated that the

report at the convention itself will show that the 11,000 mark either has been reached or passed.

Our concern at the headquarters building is not so much with the number of members we can interest in the work of the ASSOCIATION but how well we can serve those who look upon the AMERICAN PHARMACEUTICAL ASSOCIATION as the bulwark of professional pharmacy in America. We have realized for a long time that pharmacists in the United States have turned instinctively to this ASSOCIATION and its Washington staff for the kind of information and guidance that members of the health professions expect from their professional societies.

We are fully cognizant of the excellent work that is being done by the national organizations representing the drug industry, such as the associations of manufacturing pharmacists, the associations of wholesale druggists and the National Association of Retail Druggists. At no time has the A. PH. A. endeavored to inject itself into the affairs of the trade or industrial associations. It has held fast to the objectives enunciated by its founders and it will continue to do so.

Surrounded as the ASSOCIATION is at its headquarters in Washington by the various governmental agencies in the field of health and welfare, by the military services, and by the veterans and civil service agencies, it has endeavored to represent adequately the views of pharmacists in their professional capacities when dealing with these groups.

Furthermore, it has been the function and aim of the ASSOCIATION to establish adequate contacts with other professions and institutions to the end that a true evaluation of pharmacy may be made and be available to all who have an interest in its activities.

CHANGES IN ADMINISTRATION

AT the annual conventions of the A. PH. A. there is always a change of officers. The retiring president becomes a member of the Council. A new president takes over the helm and there are changes in committees and in general activities which reflect the application of new minds and new hands to the problems which constantly arise in ASSOCIATION affairs.

Since 1934 there has been in progress in the AMERICAN PHARMACEUTICAL ASSOCIATION a transition which involves the transfer of major activities from the offices and laboratories of individuals working on a voluntary basis, through committees and such staffs as may have been available, to a well-organized constantly functioning headquarters staff housed in the ASSOCIATION's own building and able to carry on routine and special duties from year to year regardless of changes of administration. This provides for American pharmacy a highly specialized effective service, which benefits every pharmacist even though he may not be a member of the ASSOCIATION or a contributor to its activities.

This is what the founders and the many stalwart members of the ASSOCIATION down through the years have dreamed about and it is what the present generation wants in fuller measure from year to year.

As this is written, plans are already under way for the improvement of many of the services of the ASSOCIATION and the extension of its researches on problems which affect the profession everywhere. The Pittsburgh convention will give great impetus to these activities all along the line.

As Dr. George A. Moulton leaves the presidential office after two years of productive effort in that capacity, we at A. PH. A. headquarters wish to extend to him in this public manner our sincere thanks for the encouragement and inspiration which he supplied in full measure, and we look back with thankful appreciation upon his own contributions in sacrifice of time and energy which were given so generously to the cause.

We also welcome the new president, Dr. Earl R. Serles, to the highest office within the gift of the pharmacists of the United States. He will have at his disposal the best effort of which our staff is capable and we look forward with pleasure to continuous service to our ASSOCIATION under his leadership.



1946 A.Ph.A. MEETING IN REVIEW

MORE than 1250 were registered at Pittsburgh's William Penn Hotel for the 92nd meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION and its affiliated organizations. During the sessions from August 25 through 30, more than 260 papers and reports were presented, among which pharmacists in every branch of the profession found much of interest and value.

The first two days were devoted principally to executive committee meetings and the opening sessions of the American Association of Colleges of Pharmacy, National Association of Boards of Pharmacy and Conference of State Pharmaceutical Association Secretaries. In the college group there was keen interest concerning the national survey of pharmacy just inaugurated by the American Council on Education under the direction of Dr. Edward C. Elliott. Dr. Elliott's comments, both at the college meetings and before other groups, brought spirited discussion concerning the present status of pharmacy and its needs for the future.

Particular interest was expressed among the educators in plans to develop graduate study for training men to expand the war-depleted staffs of colleges and to provide pharmaceutical specialists for hard-pressed manufacturing laboratories.

Some of the educational facilities which have deteriorated as a result of the war years were viewed with concern. The AMERICAN PHARMACEUTICAL ASSOCIATION officially urged colleges of pharmacy "to look upon inadequate staffs as temporary and [asked] that all teachers who do not possess satisfactory technical and scientific qualifications be replaced as soon as feasible."

It was also generally felt that "over-crowding of colleges of pharmacy seems certain to lead to a lowering of educational achievement and to those conditions which bring about an impairment of the professional and economic standards essential to proper pharmaceutical services." In view of this the A. Ph. A. expressed "strong disapproval of the acceptance by colleges of pharmacy of student bodies in excess of classroom, laboratory

RAP OF THE GAVEL calls the House of Delegates to order in Pittsburgh with Sylvester H. Dretzka in the chair.

SPIRITED DEBATE of the best way to implement more satisfactory use of pharmacists in the Army is opened by Chairman Arthur H. Einbeck's report on behalf of the Committee on the Status of Pharmacists in Government Service.



and lecture facilities," through a resolution.

Discussion at the sessions reflected an undercurrent of opinion that attempts undoubtedly will be made in the 1947 legislatures to enact legislation lowering the profession's educational and licensure standards. The consensus was that present standards are essential to protect public health, which led to an ASSOCIATION resolution pledging "vigorous opposition to any legislation which would in any wise lower, impair or damage the educational and licensure standards in effect."

An especially significant development in the N. A. B. P. meetings was the adoption of a code setting up minimum practical experience standards for use in the various states. This had been previously approved but held in abeyance during the war years. Discussion indicated that many pharmacists feel that the practical experience requirement for licensure should and could be made more useful as a part of professional training through the N. A. B. P. program adopted. It will be put into effect "as soon as possible."

At the first general session of the AMERICAN PHARMACEUTICAL ASSOCIATION, Chairman B. V. Christensen reported for the Committee on Con-

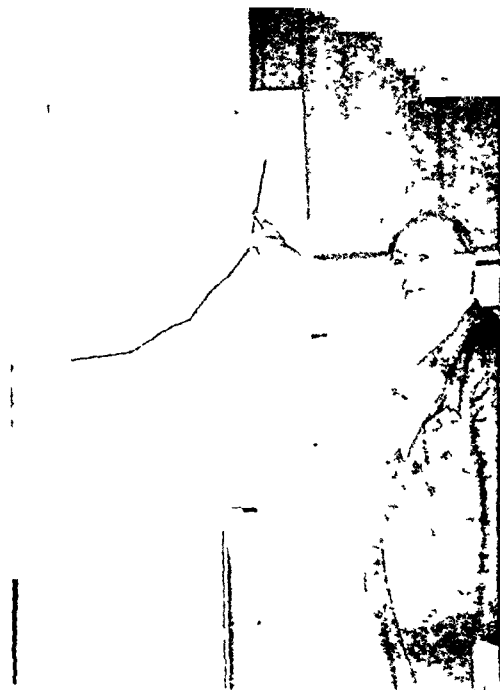
stitution and By-Laws concerning proposed amendments. One amendment to the Bi-Laws provides for more equitable representation for state pharmaceutical associations in the House of Delegates on the basis of total A. PH. A. membership in the state associations. Under the amended provision each state association will have at least one delegate, and one additional delegate for each 200 A. PH. A. members or major fraction thereof where A. PH. A. membership in the state association exceeds 200. Heretofore 500 A. PH. A. members was the basic unit for determining the number of delegates from affiliated state organizations. The amendment also provides for delegates from U. S. territorial associations, such as Puerto Rico, on this same basis.

The ASSOCIATION also adopted an improved definition of those eligible to membership, and changed the period of membership from the calendar year to the one-year period following the month of election or renewal.

A further amendment placed the establishment of membership dues and JOURNAL subscription prices in the hands of the Council. It was understood that an increase in dues would be voted by the Council in the near future to facilitate further

REPORTING for the Committee on Membership, Secretary Robert P. Fischelis points to the steep curve of A. Ph. A. membership increase since 1936.

THE ROBERT J. RUTH TROPHY for the best professional display during Pharmacy Week is received from Ray C. Schlotterer by Carl C. Anderson of Weber and Judd.



expansion of the ASSOCIATION's program. More rigorous procedures for handling the membership roll were also approved, providing that a member in arrears for two months shall be dropped from the membership or subscription lists.

AWARDS MADE

At this first general session following the annual banquet of the ASSOCIATION, Dr. George A. Moulton, practicing pharmacist of Peterborough, N. H., delivered his presidential address (see page 401). This was followed by presentation of the Robert J. Ruth trophy to Carl C. Anderson, representing Weber and Judd, retail pharmacists of Rochester, Minn. The award was made in recognition of the most effective professional display by a retail pharmacist entered in the 1945 Pharmacy Week contest.

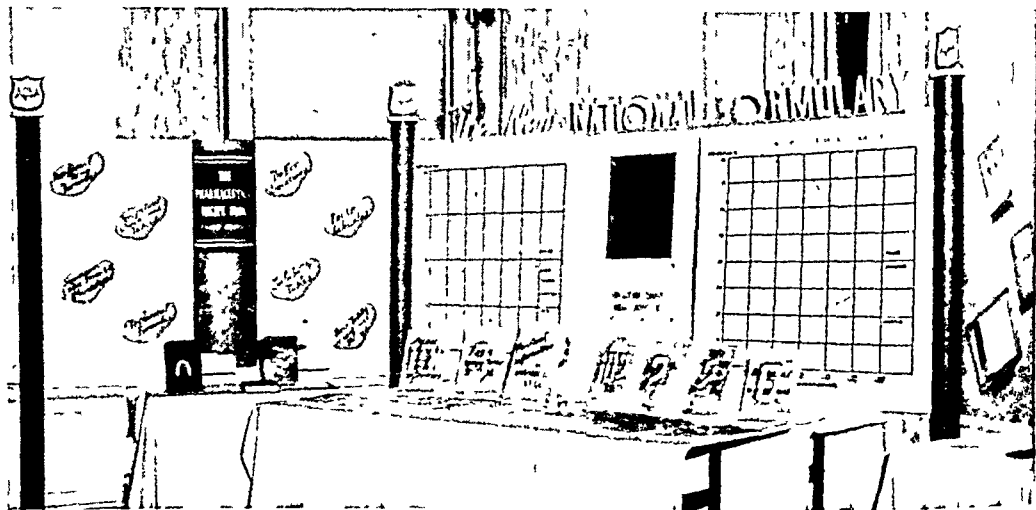
Presentation of three awards also marked the second general session on Thursday. Dr. Lloyd

better standardized and more effective product. Presentation of the 1945 award had been postponed due to wartime cancellation of last year's convention. Howard Jensen, a pharmacy graduate student, received special mention as Dr. Jannke's collaborator.

Microscopic studies of the areca nut won the Kilmer prize for Miss Elaine Friedberg, of Columbus, O. Miss Friedberg received the gold Kilmer key and an expense-paid trip to the convention. She became interested in the studies which led to the award while assisting in the pharmacognosy laboratory of Dr. L. David Hiner of Ohio State University College of Pharmacy.

Only areca nuts weighing 5 Gm. or less were heretofore permitted for use in veterinary preparations under official standards. Some pharmacognosists believed that the larger nuts might not be the official species now specified in the

EXHIBIT on the new National Formulary and other A. Ph. A. publications attracted wide attention at the convention in Pittsburgh. Exhibits on the new editions of the Pharmacopœia and New and Nonofficial Remedies were also displayed.



W. Hazleton, pharmacist and pharmacologist of Washington, D. C., received the 1946 Ebert Prize. The award—offered by the ASSOCIATION since 1873 for outstanding research—was made this year for study of a mouse test for senna catharsis, extending over several years. Dr. Hazleton's research was conducted at the George Washington University School of Pharmacy in collaboration with Miss Kathleen D. Talbert.

Dr. Paul J. Jannke, of the University of Nebraska College of Pharmacy, received the 1915 Ebert Prize for his research on the chemistry and pharmacology of sodium morrhuate, leading to a

monograph, even though their alkaloidal content had previously been demonstrated as satisfactory. It was to help decide this point that Miss Friedberg undertook her work, confirming that larger nuts were the official species. The Kilmer award is offered by the ASSOCIATION to encourage studies in pharmacognosy by senior pharmacy students.

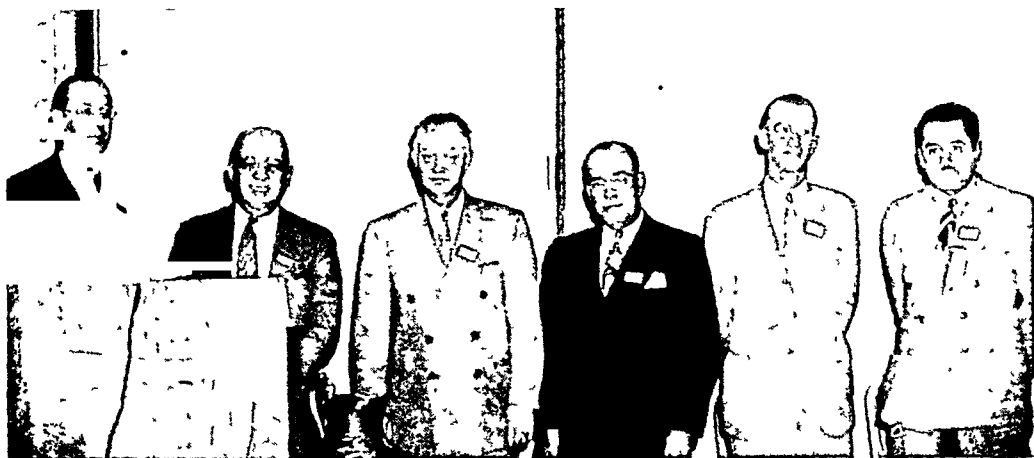
NATIONAL SURVEY DISCUSSED

Following presentation of the awards, Dr. Edward C. Elliott, director of The Pharmaceutical Survey, addressed the second general session.

on "The Answer versus the Question." He explained that the Survey, which is expected to require at least three years, constitutes "another step in the forward movement of the profession in its crusade for the protection and promotion of American well being. . . . From the limited vantage point of the present moment, the broad, inclusive purpose of the Survey is to assemble,

tions of so-called "socialized medicine" were involved. Since Congress had authorized the government to provide this pharmaceutical service, it was felt that it should be done through normal local channels of distribution in the best interest of the profession and the veterans.

Comdr. Briggs also outlined steps that are being taken to provide more adequate pharma-



A. PH. A. OFFICIALS installed for the coming year were (l. to r.) Robert P. Fischelis, secretary; George D. Beal, member of the Council; Earl R. Serles, president; A. Lee Adams, first vice-president; Harold V. Darnell, second vice-president; Hugo H. Schaefer, treasurer. Newly installed Council member not shown is Glenn L. Jenkins.

as far as may be possible with the means and resources available, those facts of education, of science, of business and of life that must be taken into account by those preparing men and women for the skillful and effective performance of the duties belonging to the profession of pharmacy. Before it is completed," he said, "it is expected that the Survey will be able to point out the ways and means for the constructive utilization of these facts. In other words, there should result a prescription for the better health of pharmacy as this is determined by its trained practitioners."

By resolution the ASSOCIATION asked for full cooperation from all branches of the profession in getting at the true facts sought by Dr. Elliott's survey teams.

VA PHARMACY

Another highlight of this session was the address by Comdr. W. Paul Briggs, director of pharmacy service in the Veterans Administration, who announced that 41 state associations had adopted the program to supply prescriptions and medical supplies to veterans with service-connected disabilities. He explained the operation of the plan, emphasizing that no implica-

ceutical service in VA hospitals. To illustrate some of the expanded responsibilities of VA pharmacists he mentioned the following official duties: The pharmacist—

1. Is personally responsible for storage, issuing, advising medical officers regarding dosage, method of administration, precautions and contraindications of all drugs authorized for use for investigational or experimental purposes;
2. Maintains liaison between pharmacy, ward physicians and laboratory with respect to necessary clinical laboratory checks when drugs requiring such control are used,
3. Abstracts medical and pharmaceutical journals, interviews manufacturers' representatives, maintains current reference file of new developments in drug therapy;
4. Prepares and distributes to the medical staff technical information on new therapeutic agents, dosage, contraindications, use, methods of administration, precautions, etc.;
5. Maintains records on prescribing trends and usage rates of drugs;
6. Develops special formulas to meet the medication requirements of the medical and dental staff;
7. Carries out pharmaceutical research to improve usefulness and stability of medical prepara-



tions which are manufactured by the pharmacy.

Another highlight of the second general session was the panel discussion of trends in therapeutics as reflected in new editions of the Pharmacopœia, National Formulary and New and Non-official Remedies. Participants were Dr. Justin L. Powers, chairman of the N. F. Committee; Dr. E. Fullerton Cook, chairman of the U. S. P. Revision Committee; and Dr. Austin Smith, secretary of the A. M. A. Council on Pharmacy and Chemistry. The new editions of the three compendia were also previewed in the exhibit room at the convention.

INSTALL OFFICERS

At the final general session Friday, the following officers were installed for the coming year: Dr. Earl R. Serles of Chicago, president; A. Lee Adams of Glencoe, Ill., first vice-president;

LLOYD W. HAZLETON (above) receives the 1946 Ebert Prize for his pharmacologic research on senna.

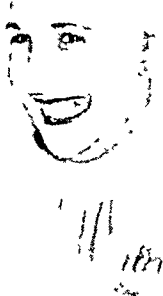
SURGEON GENERAL Norman T. Kirk (right) tells pharmacists at the A. Ph. A. convention why the Army feels that pharmacy service can best be provided through a proposed Medical Service Corps that would absorb the Pharmacy Corps.

Harold V. Darnell of Indianapolis, second vice-president; Dr. Robert P. Fischelis of Washington, D. C., secretary; and Dr. Hugo H. Schaefer of Brooklyn, treasurer. Council members installed at the close of the convention were: Dr. George D. Beal of Pittsburgh, Dr. Robert P. Fischelis of Washington, D. C., and Dr. Glenn L. Jenkins of LaFayette, Ind. The Council later named P. H. Costello of Chicago to succeed Dr. Fischelis as an elected member, since the latter is also an ex-officio member by virtue of his election as secretary. The Council again chose Dr. Beal as its chairman, with Henry H. Gregg to serve as vice-chairman.

ADDRESS OF NEW PRESIDENT

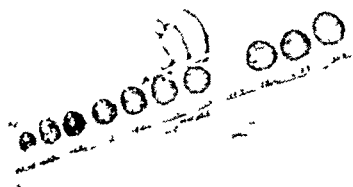
In his address as president-elect, Dr. Serles called for establishment of a national interprofessional council to consider officially any health measure affecting the welfare of the patient. The new president proposed such a council to bind together leaders of organized medicine, dentistry, pharmacy and other health groups to "consider all matters of economic, legislative and social relationships which are conceived to provide better medical care for the patient. While it is true," said Dr. Serles, "that the educational training necessary for licensure in each of the health professions requires a certain degree of specialization in various scientific fields, the results of our labors are proved at the bedside of the patient. He is our common interest, and our





WINNER OF THE KILMER PRIZE, Miss Elaine Friedberg (left) of Columbus, O., points to the oversize areca nuts on which she conducted studies in microscopic pharmacognosy.

FDA REGULATIONS were explained to pharmacists in Pittsburgh by Dr. Paul B. Dunbar (below) U. S. Commissioner of Food and Drugs.



that the Army could not approve, from an organizational standpoint, a separate corps for each specialty.

This view was refuted by Drs. Robert L. Swain, H. Evert Kendig, John W. Dargavel and others, who maintained that the Congress and many in the profession apparently felt that the Pharmacy Corps was needed to develop military pharmacy properly, and for that reason the Corps should be continued. This brought a rebuttal from Gen. Kirk which indicated that the position of the Surgeon General's office was apt to remain unchanged.

Later discussion was followed by resolution in the House of Delegates which put the ASSOCIATION on record as "strongly in favor of maintaining and activating the Pharmacy Corps"

approach to the problems which he presents can more readily be attained if we clearly understand the road the practitioner of each profession must travel to reach him."

Dr. Serles pledged that during his term of office he would strive to bring about such an over-all council in the field of medical care.

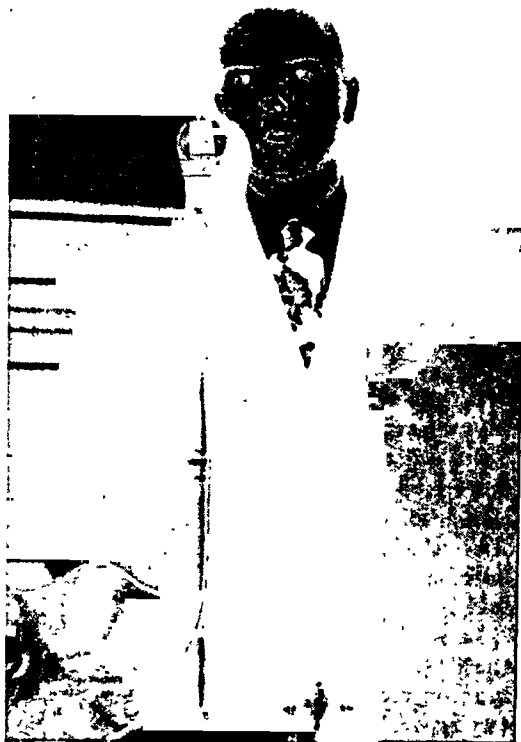
To safeguard high professional standards of pharmaceutical practice, Dr. Serles asked for united effort "against the insidious attack of those who seek to infringe upon the rights to practice the profession either through subterfuge or by direct usurpation by legal procedure."

His inaugural address also included recommendations to streamline the ASSOCIATION's committee structure to bring about more efficient operation of its professional activities.

PHARMACY CORPS STIRS DEBATE

In the House of Delegates on Wednesday, extended debate occurred on the Pharmacy Corps situation, following an address by the Surgeon General of the Army, Maj. Gen. Norman T. Kirk. Gen. Kirk explained the purpose and functions of his proposed Medical Service Corps, maintaining that both the interests of pharmacy and the medical department could be served best through such an organization, into which the Pharmacy Corps would be absorbed. He pointed out that a number of specialized groups were needed to implement military medical service but





DR. AUSTIN SMITH of the American Medical Association discusses new viewpoints on pharmacist-physician relationships.

and pledging its full influence and activity to this end. The resolution also expressed "vigorous opposition to any attempt to modify or disregard the intention of Congress as shown by its unanimous approval of the Pharmacy Corps Act." The ASSOCIATION commended the Committee on the Status of Pharmacists in Government Service for its work on this problem, and joined other organizations represented on the Committee in extending authority for it to act in any situation which may develop with respect to legislation affecting the status of pharmacy in the armed forces. Further developments are expected during the sessions of the 80th Congress which convenes in January.

OFFICERS ELECTED BY THE HOUSE

Before adjournment of the Wednesday session of the House of Delegates, the delegates elected Dr. A. C. Taylor of Washington, D. C., as honorary president of the A. Ph. A. for the coming year. Dr. Hugo H. Schaefer of Brooklyn and Dr. Robert P. Fischelis of Washington, D. C.,

were re-elected as treasurer and secretary, respectively. These officers received a unanimous vote on nomination by the Council.

Dean Hugh C. Muldoon of Duquesne University was named chairman of the House, and E. M. Josey, Kentucky association secretary, vice-chairman.

Nominations for officers to be elected by mail ballot of the membership, which were made by the House of Delegates, appear on page 416.

As the meeting place for the 1947 convention the delegates chose Milwaukee, the week of August 24.

FOOD AND DRUG LAW

When the House reconvened on Thursday, Chairman L. M. Kantner of the Committee on State Food and Drug Legislation reported on control of drug distribution. This was followed by an address by Dr. Paul B. Dunbar, U. S. Commissioner of Food and Drugs, who reviewed intricacies of Federal law governing the distribution of drugs and explained why these are necessary for the protection of the public. "As a profession directly concerned with public health, pharmacy is inevitably required to conform with an unusual array of laws and regulations," he pointed out.

Dr. Dunbar took occasion to remind pharmacists that under Federal law prescriptions for barbiturates and certain hypnotics and narcotics must carry the warning "May Be Habit Forming," unless the prescription is not refillable.

The recent requirement that the warning placed on thiouracil by the manufacturer must be transferred to a prescription was also discussed at some length. Dr. Dunbar maintained that under Federal law there was no alternative to this regulation since "the potency for harm, as well as for good, of this drug is so great that it ought not to be put in the hands of even a skilled practitioner without giving him the fullest advice and cautionary statements about the dangers that might result if he failed to supervise the patient carefully."

Although pharmacists at the convention seemed in general agreement concerning the need for such warning, the Commissioner's remarks aroused discussion as to whether such instructions to the patient should not more properly come from the attending physician. Later this view was officially adopted in a resolution which commended the ASSOCIATION'S Secretary, Dr. Robert P. Fischelis, for his forceful presentation and early recognition of the dangers involved in placing warning labels on prescriptions.

Dr. Austin Smith, secretary of the A. M. A.'s

Council on Pharmacy and Chemistry, who was present, indicated that the medical profession was not pleased with any regulation that would seem to interfere with the right of a physician to full control over directions given his patient, and stated that the Council on Pharmacy and Chemistry expected to discuss this matter at a meeting in October when all interested groups concerned with this matter would be represented.

ACTION ON BARBITURATES

Next came a comprehensive report by Chairman A. L. I. Winne of the Committee on Legislation, who reviewed the survey of present laws and regulations governing the distribution of barbiturates, and placed before the delegates a model state law designed to bring about more effective and uniform control of barbiturate distribution.

After considerable debate concentrated largely on the question of the number of renewals to be permitted under the law and the question of record keeping, the proposed provisions of a uniform state barbiturate act were approved in principle. The officers were instructed to supply copies to state pharmaceutical organizations for information and guidance. The House of Delegates definitely recorded itself in opposition to Federal legislation in this field.

Dr. Austin Smith also addressed the third session of the House, discussing "Common Ground on which Physicians and Pharmacists Can Meet."

MISLEADING RADIO COMMERCIALS CRITICIZED

In a report for the Committee on Radio Publicity, Glenn Sonnedecker again raised the issue of misleading and objectionable radio advertising for certain household remedies, which he has previously attacked editorially in the JOURNAL. Although conceding that the offending manufacturers were a "small but raucous minority" the Committee report maintained that this did in no wise lessen the need for higher standards of self-regulation for the protection of reputable manufacturers and in the best interests of practicing pharmacists and the public. Acting on the Committee's recommendation, the ASSOCIATION approved a resolution commending "all efforts to avoid improper drug advertising and urges radio officials and organizations to assume their public health responsibilities by co-operating fully in this endeavor." It disapproved "the dissemination of misleading or unqualified advertising claims that a medicinal product is 'compounded just like a doctor's



PAUL JANNKE (left) receives the 1945 Ebert Award at the A. Ph. A. meeting for his research on sodium morrhuate.

'prescription' or that a medicinal product is 'recommended by your druggist.'"

CHANGE IN PHARMACY WEEK POLICY

Following the report of the Committee on Pharmacy Week a proposal to make a basic change of policy regarding the observance of this event was laid before the delegates. Authorization was given to develop a broad and extensive plan that will identify Pharmacy Week as a nationally important program of public health education through the pharmacy. Plans are under way to dedicate the next observance to the national movement for the control of cancer. It was generally agreed that this plan should make Pharmacy Week more valuable both to the public and to the pharmacist. In view of these developments Pharmacy Week may not be observed during the 1946 calendar year.

In reporting for the Committee on Membership, Secretary Fischelis announced that the

ASSOCIATION has more than 11,400 members, representing approximately a 100% increase since the last convention.

ORGANIZATIONAL CHANGES WILL BE CONSIDERED

On recommendation of President Moulton the delegates approved appointment of a special committee to study the A. Ph. A.'s present form of organization and that of similar professional societies with special reference to:

1. Limitation of elected membership on the Council to not more than two successive terms;
2. More adequate geographic distribution of the elective officers, with due consideration to the extent of A. Ph. A. membership in the various districts;
3. The advisability of establishing districts coinciding with districts of the A. A. C. P. and N. A. B. P., so that district meetings of the A. Ph. A. may be held regularly, possibly preceding or following the district meetings of the other organizations;
4. Formulating a definite program for the establishment of new local branches of the ASSOCIATION

in the districts which would be set up and that each such branch hold at least one annual meeting for an official visit by the national officers;

5. Consideration of the advisability of extending the terms of office of the editors and the secretary beyond the one year now provided for to assure continuity of effort in the best interests of the ASSOCIATION.

The last mentioned recommendation was referred to the Council for attention rather than to the special committee.

The ASSOCIATION likewise approved President Moulton's recommendation that an increase in dues, now under consideration, be effectuated and that adequate sums be set aside for public relations activities.

DUNNING MAKES GIFT FOR MEMORIAL

Following the announcement that a memorial flag staff would be erected on the grounds of the headquarters building through a gift from Dr. H. A. B. Dunning of Baltimore, a life member, a resolution of appreciation was adopted concerning this and many other contributions Dr. Dunning has made over the years which have contributed so much to the advancement of American pharmacy. The memorial will commemorate the services that pharmacists have rendered in the armed forces since the birth of the United States. (*For details see p. 405.*)

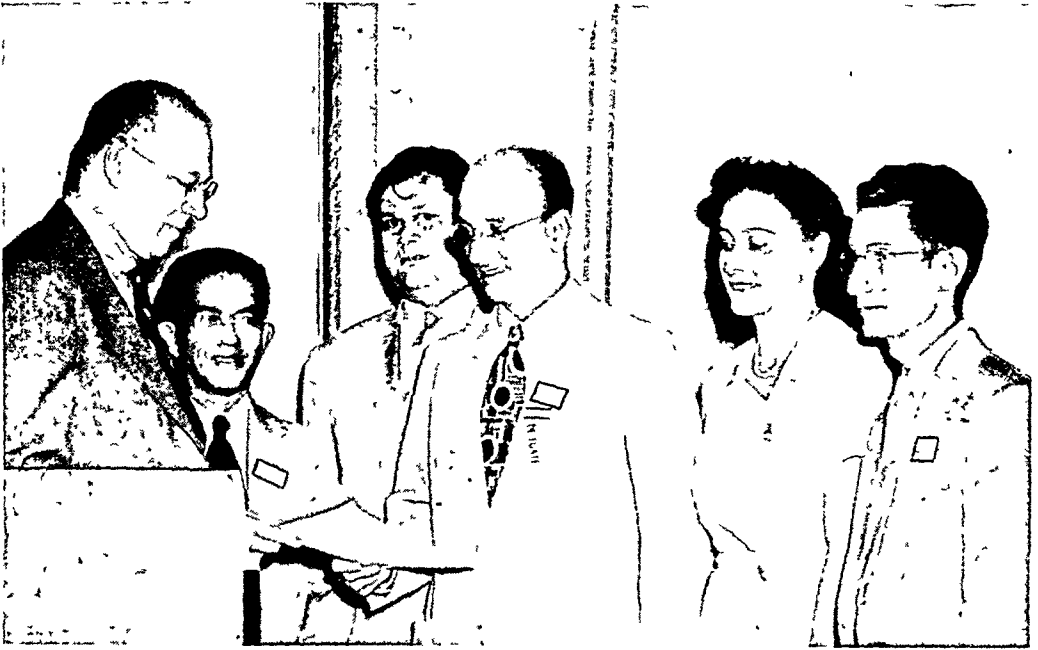
Among resolutions defining the ASSOCIATION's present position in regard to proposed legislation, is one that approves the general principles underlying a National Science Foundation for coordinating and promoting scientific research, provided that every effort be made to preserve freedom of scientific thought, investigation and experiment. Another resolution reaffirmed the ASSOCIATION's position in regard to health insurance, pledging cooperation "with any adequate plan to extend medical care which utilizes existing medical facilities and guarantees the right of free choice of pharmacist, dentist, nurse, physician or other medical practitioner."

There was considerable interest at the sessions in the significance of the World Health Organization just established, particularly in view of participation by the A. Ph. A. Secretary in the initial international conference as an adviser to the U. S. delegation. The ASSOCIATION formally congratulated Surgeon General Parran of the U. S. Public Health Service for his accomplishments as president of the organizational conference which brought the World Health Organization into being.

With respect to the national scene, the ASSO-



A MODEL STATE BARBITURATE ACT is laid before the House of Delegates by A. L. I. Winne, chairman of A. Ph. A.'s Committee on Legislation, for debate and approval in principle.



PUERTO RICAN PHARMACISTS who came to Pittsburgh for the convention discuss their problems with the A. Ph. A. Secretary. Shown left to right are: Secretary Fischelis; Luis Torres-Diaz, dean of the College of Pharmacy, University of Puerto Rico; Francisco Hidalgo, retail pharmacist; Carlos G. Gonzalez, vice-president of the pharmaceutical association of Puerto Rico; Carlota Badilo, secretary of the Puerto Rican pharmacy board and of the pharmaceutical association; and Rodolfo S. Escabi, faculty member of the Puerto Rico College of Pharmacy.

CIATION took occasion to encourage pharmacists to participate in national, state or local committees designed to promote health and conserve life. The ASSOCIATION itself pledged all possible aid to A. Ph. A. members and to other pharmaceutical associations to implement the services of pharmacy in this direction.

DUPLICATE DRUG SPECIALTIES SCORED

In a strongly worded resolution, the ASSOCIATION brought into the open a smouldering resentment on the part of pharmacists regarding drug manufacturers who have steadily increased the production and promotion of pharmaceutical specialties that in many cases are essentially duplications. It was pointed out that specialty duplications not only exert economic pressure on pharmacists through enormously increased inventories but also represent a wasteful practice that significantly increases the cost of medical care. The members instructed the ASSOCIATION to "use every opportunity in an endeavor to bring about a change which would lead to the elimination of unnecessary duplicate products"

During the convention week there was an unusually large attendance at Section meetings, with general approval expressed of the joint

meetings that had been scheduled among the Sections and affiliated organizations. A total of 104 papers was presented at the various Section meetings.

HOSPITAL PHARMACISTS INSTALL OFFICERS

More than 100 hospital pharmacists attended the A. Ph. A. meeting and the concurrent sessions of the American Society of Hospital Pharmacists. The Society installed Hans S. Hansen of Chicago, as chairman; Jennie M. Banning of Bradford, Pa., as vice-chairman; Walter Frazier of Springfield, O., as secretary; and Sister Gladys Robinson, of Milwaukee, as treasurer.

APOTHECARIES HONOR FOOTE

In the College of Apothecaries, L. A. Weidle, St. Louis pharmacist, was named president for the coming year. Paul Stodghill of Denver was elected vice-president, and James S. Hill of Niagara Falls, N. Y., president-elect.

To receive the J. Leon Lascoff award for the most valuable contribution to professional pharmacy during the past year the College of Apothecaries chose Dr. Perry A. Foote of Gainesville, Fla. Dr. Foote, who heads the University of Florida School of Pharmacy, was particularly

short review of the results of the recommendations which I made in my inaugural address, a few broad observations based upon my experience and contacts while acting as your President, and the projection of several recommendations resulting therefrom.

When I took office at the final general session of the Cleveland convention, we were in the midst of the great national production effort which furnished the war materials that enabled our armed forces to speed the day of final victory. It was nearly a year later before the atomic bomb brought hostilities to an effective and speedy end.

We had planned to meet in Philadelphia in 1945 but the government decreed otherwise when transportation and hotel facilities were needed to finish the job which we had set out to do in bringing World War II to a victorious conclusion.

Pharmacy International

Much of what has happened since August, 1945, gives rise to the serious question of how well and how thoroughly we have accomplished the major objective for which thousands of American men and women paid the supreme sacrifice and for which millions altered the customary routine of their lives, sacrificing convenience, carefully planned programs for the future, and family ties.

We live in the hope that our statesmen meeting with the representatives of the United Nations may finally succeed in erecting from the ruins of war, a civilization which will dedicate itself to the pursuits of peace and to the final elimination of war as a means of settling international differences.

It is obvious from the meetings and conferences which have been held by representatives of the United Nations that differences involving national pride, and racial backgrounds present serious obstacles to world peace. Yet we are informed that when a call went out to the nations of the world for an international health conference last June, 67 nations were represented in the sessions which resulted in the approval of a constitution for a world health conference which is to be organized within a year. Thus we note again that science, and especially public health science, knows no international boundaries.

It is to be hoped that the World Health Organization may point the way toward the achievement of world peace by concentrating attention upon the conservation of life rather than upon its destruction.

Compared to the great problems confronting the statesmen of the world, our own difficulties may seem insignificant and yet experience indi-

cates clearly that in our families, in our communities, in our professions, in our states and in the nation the problems of survival and of relations with one another differ only in degree.

Pharmacy continues to be a service which is indispensable to the public health and welfare. Pharmacists must therefore give continuous attention to supplying this service in its most modern and effective manner. To this end we are constantly at work on improving our educational system, our system of licensure and our system of professional practice whether that be associated with hospitals, retail pharmacies, manufacturing laboratories, research institutions, governmental organizations, or teaching institutions.

I happen to be a retail pharmacist, one of the group which constitutes the major fraction of the membership of the A. Ph. A. When I took office I pointed out that one of the most essential needs of this ASSOCIATION was the interpretation of its functions and services to the men and women who operate the pharmacies and prescription shops of America. To many of them this ASSOCIATION has seemed very far away. This has been due partly to the geographic location of our headquarters but more largely to our failure to bring the activities of the ASSOCIATION to the individual pharmacist in his own establishment and to the pharmaceutical organizations of the states which are far removed from the center of population.

In an endeavor to make a contribution toward this end, I undertook, with the consent of the Council, a series of trips to state pharmaceutical associations and to the Territory of Puerto Rico for the sole purpose of bringing a personal message from the ASSOCIATION to the pharmacists in these localities and letting them know that any gap between them and their association was a matter of geography and mileage only. The many messages I have received after making these trips and the reception accorded me as President of your ASSOCIATION lead me to suggest that future presidents, as well as the Secretary of the ASSOCIATION, should strive to make as many such contacts as regularly as time and funds permit.

Membership

A second objective which I projected in my inaugural address was the establishment of a definite program of increasing our membership. I told Dr. Fischelis shortly after he was elected Secretary that I would like to be able to report at the convention over which I would preside that

our total membership had reached 10,000. Tonight he informs me that, as of August 20, we have over 8000 active members and more than 3000 associate, or student members, a grand total of 11,032.

This is an increase of over 6000 since the Cleveland convention. This was accomplished as a result of a variety of campaigns and co-operation from many sources. It could not have been accomplished without a systematic and well-organized effort at the ASSOCIATION's headquarters, nor could it have been accomplished without the cooperation of the colleges of pharmacy, the boards of pharmacy, the state pharmaceutical associations and hundreds of persons working through our local branches, our student branches and in their individual capacities.

Dues and the Journal

To all who have cooperated so loyally let me express my profound thanks, but let me also call attention to the fact that we have only added a relatively small fraction of the potential membership of this ASSOCIATION. I am sure that we are headed in the right direction for further substantial increases and as we secure them this ASSOCIATION will grow not only in numbers but also in influence and in the ability to give greater attention to the welfare of our membership and to the improvement of pharmaceutical practice.

While I am on this subject I must call attention to the small sum which we are now collecting from our membership in the way of dues. It is really almost shameful that a professional group such as ours should expect as much in the way of professional representation and association service as it receives, for the small sum of \$5 a year. The Council has discussed this matter on a number of occasions and it has authorized the Committee on Constitution and By-Laws to bring before you at this convention the advisability of amending the By-Laws to permit the Council to fix the annual dues so that they can be adjusted to meet the cost of services rendered.

If the annual dues were set at \$10, for example, the ASSOCIATION could provide both the *Scientific Edition* and the *Practical Pharmacy Edition* of the JOURNAL to all members without further cost to them. It could arrange to supply every member with all of the supplements to the National Formulary as soon as they are issued and without requiring the member to write for them. It could likewise supply interim revision announcements to every member without additional charge. There is also the possibility that interim revision

sheets covering changes in the U. S. Pharmacopoeia could be supplied by the ASSOCIATION directly to the membership whenever they are issued.

It would also be possible to prepare and supply special bulletins to cover information of unusual importance at a time when it would be new and especially timely. These are services which your ASSOCIATION has in contemplation and I hope that you will approve an increase in the dues which would be accompanied by an increase in service.

In my inaugural address I recommended that the Committee on Publications of the Council study ways and means of increasing the revenue from our publications. This has been done and our receipts from advertising in the JOURNALS have shown a healthy increase. This has helped us to supply you with a more useful publication. The *Practical Pharmacy Edition* of our JOURNAL, ably edited by Glenn Sonnedecker, now reaches about 38,000 members of state pharmaceutical associations. This publication fills a long-felt want and a number of features recently established in it give our members a keener and clearer insight into the great variety of problems which come to us for solution and the large number of contacts which are maintained in order to serve the pharmacists of the nation.

The Pharmaceutical Survey

I also recommended that study be given to improvement of the pharmaceutical curriculum in our colleges of pharmacy so that men and women graduating from our schools will be better prepared for the modern practice of pharmacy. Not only has this matter had the attention of the American Council on Pharmaceutical Education but it has been made one of the major studies of The Pharmaceutical Survey which is now in progress under the direction of the American Council on Education and financed by the American Foundation for Pharmaceutical Education.

We are looking for great things from this survey. It is being made under highly responsible auspices and we hope that the survey staff will be able to assemble all of the facts bearing on the problems under consideration and judge those facts with the impartiality of fresh minds applied to age-old problems. It is not difficult for those who are unfamiliar with the many facets that make up the pattern of American pharmacy to be led into byways and to judge the whole by undue emphasis on one of its parts. This is what has been going on in the profession of pharmacy and

the drug industry for years. The segment which could focus greatest attention on itself acquired most recognition in the press and in public relations generally.

Many people, both in and out of the drug industry, do not yet fully realize that there is an essential professional service which constitutes pharmacy and—though it may be supplied in surroundings which are often strange and sometimes even ludicrous—that essential service remains the same and requires a background of professional training, aptitude, integrity and experience which can be acquired only through an educational process equivalent to that required for competence in other learned professions.

Administrative Affairs

Other recommendations made in my inaugural message included a study of the form of organization of the General Sessions and the House of Delegates for the purpose of recommending changes which would expedite the ASSOCIATION'S activities. These studies are progressing and I shall have a recommendation to present on this subject later in this address.

I also recommended the establishment of a statistical and legislative service, and I am glad to note that the Secretary has added personnel to the headquarter's staff which is competent to make such statistical studies and keep pace with the progress of national legislation. The reports on membership, on legislation and on other headquarters activities will demonstrate the extent to which this service has been established and is proving useful.

In this connection, I feel that I must comment on the noticeable improvement in our administrative set-up at the Washington headquarters. This ASSOCIATION has been passing through a period of transition in the manner of performing its services. Time was when practically every service rendered by this ASSOCIATION was on a volunteer basis. Officers and committee chairmen, with the possible exception of the Secretary, gave their time and effort on a purely voluntary basis.

Even after a full-time Secretary was provided for and a full-time editor and a headquarters office were added, many of the principal functions of the ASSOCIATION remained in the hands of volunteers. This situation was unsatisfactory in many ways because responsibility was divided and volunteer workers had to give preferred attention to their bread-and-butter activities. It has taken us a long time, perhaps too long, to come around to the point where we have realized

that an organization which gives the large amount of service required in the production of its JOURNALS, the revision of the National Formulary and the statistical and other research services regularly supplied must have an adequate full-time staff, competently directed and well trained. We now have the beginnings of such a staff and this is reflected in the improvement of our services.

To find the funds to employ the staff and thus to give the services has always been a difficult problem. It was made more difficult by our failure to be a little venturesome. We could not employ the staff because we did not have the money. We did not have the money because we could not employ the staff to give the services which would make more pharmacists want to be members of the ASSOCIATION.

When the Council at its fall meeting in 1945 accepted the recommendation of its Committee on Finance to venture beyond the previous largest annual budget to the extent of \$70,000, it broke the log jam which has been responsible for much of our failure to expand. The enlarged expenditure was predicated upon anticipated increased income from our publications and an increased membership. It became the duty of the administrative officer to produce the increased income to meet the new expenditures. You will be glad to learn, as I was, that the mid-year accounting showed that receipts for the first half of the year have kept well ahead of expenditures and a careful check of anticipated receipts and expenditures for the balance of the year indicates that there is little doubt that the \$200,000 budget upon which the ASSOCIATION embarked last January will be balanced and that we may even have an operating surplus.

The financial position of this ASSOCIATION is sound. It is not a rich organization in the sense that it can squander money, but its reserves are such that there is no need to hoard current income which members are paying in order to obtain services. These services must be rendered and we shall pay for them out of income as we go along. To maintain this policy each member must contribute by prompt payment of dues and encouragement of advertisers to use our publications as a medium for the announcement of their products.

International Cooperation

When I recommended that we explore the avenues for greater cooperation between the nations of the Western Hemisphere and the possibilities of international cooperation in our field of

endeavor we were still at war. In the past year we have moved as swiftly in disintegrating our armed forces and our war production lines as we were moving to build them up two years ago. Sometimes it looks as though we may have speeded the disintegration process too much.

That there is need for cooperation between the nations, if we are all to survive, becomes clearer every day. I have already referred to the profound influence of the International Health Conference upon international relations and I was greatly pleased, as I know you must have been also, when the President of the United States gave recognition to the part pharmacy can play in international health matters by naming our Secretary as one of the advisers to the United States delegation to this Conference. Our ASSOCIATION is maintaining close contact with all international agencies dealing with health matters, and I think we can look forward to the time when the National Formulary, so ably edited under the direction of Dr. Justin L. Powers, may be translated into Spanish to meet the many requests which have come from our South American neighbors for this service.

Pharmacy in the Army

We have not yet received the recognition to which we are entitled from the War Department. The Pharmacy Corps in the Army has not been activated as we had a right to expect following the unanimous action of the Congress in creating the Corps. Recently the Medical Department of the Army has been fostering a Medical Service Corps which is to include commissioned pharmacists and would supersede the Pharmacy Corps. I am in agreement with the position taken by the Committee on the Status of Pharmacists in the Government Service, that we must not sacrifice the Pharmacy Corps. The proposed pharmaceutical services to be rendered by the Medical Service Corps can and should all be integrated in the corps which already exists for that purpose, namely, the Pharmacy Corps.

Since we met in Cleveland, the "grim reaper" has taken 93 members from our midst. This list includes the Honorary President of the ASSOCIATION, Leonard A. Seltzer, and the Second Vice-President, Robert S. Lehman. The names of these deceased members will be recorded in our Proceedings Issue of the JOURNAL as is the usual custom. However, I cannot pass over the list without mentioning James Hartley Beal, for many years the most outstanding leader in our field, and the names of a few others whose activities and accomplishments have meant much in

their respective fields of endeavor and in the sections of the country where they were active. These include: John Grover Beard, Hugh P. Beirne, Frederick J. Cermak, Sr., Turner F. Currens, Frank R. Eldred, Frank X. Moerk, Frank E. Mortensen, Otto Raubenheimer, Oscar V. Sisson, Herbert Skinner. Only the limitation of time prevents me from reading the entire list.

Memorial to Pharmacists Who Served in the Wars of the United States

Through some oversight in the planning of our headquarters building in Washington, D. C., no facilities were provided for the display of a flag. Actually, our building is the only completely non-governmental building on Constitution Avenue. All government buildings have facilities for the display of the flag. Ours is therefore, at the moment, the only building on this great avenue in the capital city which has no means of displaying our country's flag while Old Glory flies from the roofs of neighboring buildings or from flagstaves erected on the grounds of these buildings. This situation is to be remedied very soon.

The time is propitious for the erection of an appropriate memorial to the pharmacists who have served our country in the wars which had to be fought to gain and preserve our liberties. In the Revolutionary War we had an Apothecary-General in the Continental Army who became an immortal when he died on the battlefield at Princeton, N. J. I refer to General Hugh Mercer who was George Washington's friend and pharmacist and whose apothecary shop at Fredericksburg is one of pharmacy's national shrines. In subsequent conflicts pharmacists played important roles in the Medical Department of the Army and in the fighting forces. There were pharmacy war veterans of the War of 1812, there still are a few of the War Between the States, there are considerable numbers of veterans of the Spanish-American War and World War I, and there are some 15,000 of World War II.

All of these men and women will be honored by the erection of a beautiful memorial flagstaff on the grounds of the A. Ph. A. building in Washington. The flagstaff will rise to a commanding height at the left of the entrance of the building from a beautifully landscaped setting with a rounded marble bench at its base bearing an appropriate inscription.

Thus, rising from a rugged marble and granite base on American pharmacy's most beautiful landmark, Old Glory will fly from a sturdy staff of bronze, proclaiming to the world that pharma-

the drug industry for years. The segment which could focus greatest attention on itself acquired most recognition in the press and in public relations generally.

Many people, both in and out of the drug industry, do not yet fully realize that there is an essential professional service which constitutes pharmacy and—though it may be supplied in surroundings which are often strange and sometimes even ludicrous—that essential service remains the same and requires a background of professional training, aptitude, integrity and experience which can be acquired only through an educational process equivalent to that required for competence in other learned professions.

Administrative Affairs

Other recommendations made in my inaugural message included a study of the form of organization of the General Sessions and the House of Delegates for the purpose of recommending changes which would expedite the ASSOCIATION's activities. These studies are progressing and I shall have a recommendation to present on this subject later in this address.

I also recommended the establishment of a statistical and legislative service, and I am glad to note that the Secretary has added personnel to the headquarter's staff which is competent to make such statistical studies and keep pace with the progress of national legislation. The reports on membership, on legislation and on other headquarters activities will demonstrate the extent to which this service has been established and is proving useful.

In this connection, I feel that I must comment on the noticeable improvement in our administrative set-up at the Washington headquarters. This ASSOCIATION has been passing through a period of transition in the manner of performing its services. Time was when practically every service rendered by this ASSOCIATION was on a volunteer basis. Officers and committee chairmen, with the possible exception of the Secretary, gave their time and effort on a purely voluntary basis.

Even after a full-time Secretary was provided for and a full-time editor and a headquarters office were added, many of the principal functions of the ASSOCIATION remained in the hands of volunteers. This situation was unsatisfactory in many ways because responsibility was divided and volunteer workers had to give preferred attention to their bread-and-butter activities. It has taken us a long time, perhaps too long, to come around to the point where we have realized

that an organization which gives the large amount of service required in the production of its JOURNALS, the revision of the National Formulary and the statistical and other research services regularly supplied must have an adequate full-time staff, competently directed and well trained. We now have the beginnings of such a staff and this is reflected in the improvement of our services.

To find the funds to employ the staff and thus to give the services has always been a difficult problem. It was made more difficult by our failure to be a little venturesome. We could not employ the staff because we did not have the money. We did not have the money because we could not employ the staff to give the services which would make more pharmacists want to be members of the ASSOCIATION.

When the Council at its fall meeting in 1945 accepted the recommendation of its Committee on Finance to venture beyond the previous largest annual budget to the extent of \$70,000, it broke the log jam which has been responsible for much of our failure to expand. The enlarged expenditure was predicated upon anticipated increased income from our publications and an increased membership. It became the duty of the administrative officer to produce the increased income to meet the new expenditures. You will be glad to learn, as I was, that the mid-year accounting showed that receipts for the first half of the year have kept well ahead of expenditures and a careful check of anticipated receipts and expenditures for the balance of the year indicates that there is little doubt that the \$200,000 budget upon which the ASSOCIATION embarked last January will be balanced and that we may even have an operating surplus.

The financial position of this ASSOCIATION is sound. It is not a rich organization in the sense that it can squander money, but its reserves are such that there is no need to hoard current income which members are paying in order to obtain services. These services must be rendered and we shall pay for them out of income as we go along. To maintain this policy each member must contribute by prompt payment of dues and encouragement of advertisers to use our publications as a medium for the announcement of their products.

International Cooperation

When I recommended that we explore the avenues for greater cooperation between the nations of the Western Hemisphere and the possibilities of international cooperation in our field of

endeavor we were still at war. In the past year we have moved as swiftly in disintegrating our armed forces and our war production lines as we were moving to build them up two years ago. Sometimes it looks as though we may have speeded the disintegration process too much.

That there is need for cooperation between the nations, if we are all to survive, becomes clearer every day. I have already referred to the profound influence of the International Health Conference upon international relations and I was greatly pleased, as I know you must have been also, when the President of the United States gave recognition to the part pharmacy can play in international health matters by naming our Secretary as one of the advisers to the United States delegation to this Conference. Our ASSOCIATION is maintaining close contact with all international agencies dealing with health matters, and I think we can look forward to the time when the National Formulary, so ably edited under the direction of Dr. Justin L. Powers, may be translated into Spanish to meet the many requests which have come from our South American neighbors for this service.

Pharmacy in the Army

We have not yet received the recognition to which we are entitled from the War Department. The Pharmacy Corps in the Army has not been activated as we had a right to expect following the unanimous action of the Congress in creating the Corps. Recently the Medical Department of the Army has been fostering a Medical Service Corps which is to include commissioned pharmacists and would supersede the Pharmacy Corps. I am in agreement with the position taken by the Committee on the Status of Pharmacists in the Government Service, that we must not sacrifice the Pharmacy Corps. The proposed pharmaceutical services to be rendered by the Medical Service Corps can and should all be integrated in the corps which already exists for that purpose, namely, the Pharmacy Corps.

Since we met in Cleveland, the "grim reaper" has taken 93 members from our midst. This list includes the Honorary President of the ASSOCIATION, Leonard A. Seltzer, and the Second Vice-President, Robert S. Lehman. The names of these deceased members will be recorded in our Proceedings Issue of the JOURNAL as is the usual custom. However, I cannot pass over the list without mentioning James Hartley Beal, for many years the most outstanding leader in our field, and the names of a few others whose activities and accomplishments have meant much in

their respective fields of endeavor and in the sections of the country where they were active. These include: John Grover Beard, Hugh P. Beirne, Frederick J. Cermak, Sr., Turner F. Currens, Frank R. Eldred, Frank X. Moerk, Frank E. Mortensen, Otto Raubenheimer, Oscar V. Sisson, Herbert Skinner. Only the limitation of time prevents me from reading the entire list.

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cists also served in the wars and are continuing to serve in peace.

As Woodrow Wilson so aptly said on Flag Day in 1915, "The flag is the embodiment, not of sentiment, but of history. It represents the experiences of those who do and live under the flag."

For this beautiful way of perpetuating the memory of those pharmacists who fought as well as lived and died to preserve the American way of life, we are indebted to a veteran of the Spanish-American War whose vision and great interest in the AMERICAN PHARMACEUTICAL ASSOCIATION have been largely responsible for the reality of our building in Washington. I refer to Dr. H. A. B. Dunning, past-president of the A. PH. A., Remington Medalist, pharmaceutical scientist, philanthropist, and patron of scientific research and development.

In this latest gift to the AMERICAN PHARMACEUTICAL ASSOCIATION, which was offered to and accepted by the Council on July 23, 1946, Dr. Dunning once more demonstrates his keen interest in the future of American pharmacy and his abiding faith in the AMERICAN PHARMACEUTICAL ASSOCIATION as the instrumentality for effective leadership. We are deeply grateful to Dr. Dunning for his many benefactions and I recommend that our expression of gratitude and appreciation be formalized in an appropriate resolution.

Form of Organization

My experience as President of this ASSOCIATION for a period of two years has demonstrated to me that our form of organization, although requiring revision in some particulars, is essentially sound. We include all who are interested in any phase of pharmacy. We have made a place for all to be heard, both by representation in the House of Delegates and by direct voice in the General Sessions.

We are now well along in the program of re-organizing our administrative facilities and building a headquarters staff competent to supply a variety of services.

With the steady growth in our membership and the responsibilities which accompany such growth, it would seem wise to determine by a careful study whether the system now in force for electing officers and members of the Council assures proper representation of the membership in these elective offices.

We must be forever grateful to the many men who have served in these offices over a considerable period of time while the ASSOCIATION

was progressing through its various stages of development.

It was through their devotion to the ideals of the profession and their fervent desire to build a strong professional society of pharmacists that we acquired so much of what we now possess in prestige, in property and in endowment.

I am sure that these same individuals who have made such generous contributions to the building of our organization will be among the first to recognize the necessity for re-studying our form of organization and establishing more effective means of satisfying the general demand for more representative distribution in these elective offices. This is a sign of more intensive interest in our ASSOCIATION on the part of the membership at large. Such signs are indicative of progress and must not be neglected.

I have given considerable thought to this situation as it impressed itself upon me more and more while I visited different parts of the country and conferred with groups of pharmacists who are interested in the AMERICAN PHARMACEUTICAL ASSOCIATION.

Based upon these impressions I have a number of recommendations to make at this time.

Recommendations

1. I recommend that a committee composed of two members of the Council, two members of the House of Delegates and two members to be selected from the general membership, appointed by the chairman of the Council, the chairman of the House of Delegates and the incoming President, respectively, be named to study our present form of organization and that of similar professional societies with special reference to the following:

- (a) Limitation of elected membership on the Council to not more than two successive terms;
- (b) More adequate geographic distribution of the elective officers with due consideration to the extent of our membership in the various districts;
- (c) The advisability of establishing districts coinciding with the districts of the A. A. C. P. and N. A. B. P. so that district meetings of the A. PH. A. may be held regularly, possibly preceding or following the district meetings of the N. A. B. P. and A. A. C. P.;
- (d) Formulating a definite program for the establishment of new local branches of the ASSOCIATION in the districts which are to be set up and that each such branch hold at least one annual meeting for an official visitation of the national officers;
- (e) Consideration of the advisability of extending the terms of office of the editors and the

Secretary beyond the one year now provided for, so as to assure continuity of effort in the best interests of the ASSOCIATION.

2. I recommend that the annual dues be increased to provide sufficient additional funds in order to increase our services to the membership. This can best be accomplished by permitting the Council to fix the annual dues, as is provided for in the proposed amendment to the By-Laws which will be before you at this Convention. In addition to the advantages that will accrue to each member from such increase in dues, as already outlined, I recommend that \$1 per active member be set aside for use in sending representatives of the ASSOCIATION into the field each year for the purpose of ascertaining the ways in which the ASSOCIATION can become more useful to its members and making its activities known to a larger number of pharmacists.

Appreciation

Such success as has come to us during the past two years has been due primarily to splendid team work between the officers, the committees and the headquarters staff directed by our Secretary and General Manager.

When I took office our late beloved Dr. Kelly was still alive. However, he was a very sick man and it was only a matter of a little more than a month after the Cleveland convention when he passed to eternal rest.

We owe much to the sacrifice which this beloved leader made in our behalf over the years.

During the interim between Dr. Kelly's death on October 31, 1944, and the December meeting of the Council, Charles R. Bohrer who had carried the work as Dr. Kelly's assistant at our Cleveland convention, continued to function as acting secretary.

In December, 1944, the Council elected Dr. Robert P. Fischelis to fill Dr. Kelly's unexpired term as Secretary and General Manager of the ASSOCIATION. How acceptably he has filled the office is apparent from the results which have been accomplished at our headquarters since January, 1945.

It is not generally appreciated that we have one of the most beautiful buildings in the city of Washington, and that the administrative supervision of the building, as well as the activities within the building, are a part of the duties of the ASSOCIATION'S secretary and general manager.

As was the case with all buildings and grounds during the war period repairs and renovation had to be postponed. We reached the postwar period with our building and grounds in need of

considerable renovation. This work has been completed. Those who have visited Washington in recent months have been high in their praise of the appearance of our building, both inside and out, and those who have visited with the officers and staff members at the building are aware that it is a veritable beehive of activity.

The coordination of these activities and the development of a smooth functioning staff, whose members are not only competent, but happy in their work, is no small task.

The officers and members of the Council have been unanimous in their praise of the splendid manner in which Dr. Fischelis has met every responsibility which goes with the office he holds. I can express the feeling of your officers and the Council in no better way than they have done by a motion passed unanimously when our Secretary completed his first year. The minutes of the Council for November 10, 1945, read as follows:

"The Council hereby records its deep appreciation of the careful and constructive manner in which Dr. Fischelis has undertaken his duties as Secretary, and congratulates him upon the confidence and loyalty that he has developed in the ASSOCIATION organization."

I wish to express again my sincere thanks to the Council, to the other officers and all committees for their faithful service and cooperation, and to you, the membership at large, once more my profound thanks for the opportunity you gave me to serve the profession which we all hold dear.



U. S. P. SETS UP ADVISORY COMMITTEE ON AMINO ACIDS

An advisory committee on amino acids has been established by the U. S. P. at the request of officials of the Food and Drug Administration and the American Medical Association. To develop adequate standards, the committee will cooperate with all groups interested in amino acids, protein hydrolysates and related medicinal products.

The committee plans establishment of research groups to study the effects of such products on nitrogen balance, protein regeneration, toxicity, and growth. When proper standards are available both oral and parenteral products of this type will be admitted to the Pharmacopoeia.

ARE ANIMAL EXPERIMENTS NEEDED?*

by A. C. IVY and A. F. ZOBEL

CURRENT controversy about the use of animals in medical research, fomented by well-meaning but misinformed people, presents a challenge for the pharmacist. For he knows better than most professional men that the triumphs of modern medicine, such as penicillin, sulfonamides, insulin, plasma transfusions, and many others, would have been impossible without exhaustive animal experiments. He knows that medical science cannot hope to score victories in the fight against cancer, tuberculosis, infantile paralysis and other scourges of humanity without large-scale animal experiments. He also knows that animal experiments are indispensable to test the potency of digitalis and vitamin preparations, to safeguard the purity of pyrogen-free solutions for intravenous injection, and for many other essential controls which assure that the public gets dependable medicines.

As an influential molder of public opinion, especially in regard to drugs and medicine, the pharmacist can do much to enlighten his friends on this subject. But he all too often takes it for granted that the general public is familiar with the truth about animal experiments. A surprisingly large number of people, however, do not realize that most laboratory animals are well fed, humanely treated, and kept under sanitary conditions. In fact, they are sometimes better off than domestic pets kept by careless persons.

Few laymen know that animal experiments are only performed in the laboratories of universities, medical schools, hospital and pharmaceutical research institutes, by and under the direction of trained scientists. Nor is it always realized that it is in the interest of the scientist to treat his animals well and to obtain their confidence. For a cooperative animal greatly facilitates scientific studies. It is easy to weigh a dog, to collect its urine and to work with it as long as it is not afraid. But once an animal is fearful, ill-tempered and uncooperative, it is rarely suitable for experiments and may represent an expensive loss. Scientists therefore have to do their best to retain the confidence of their animals. When painful operations are needed, animals are anesthetized just like human patients.

Yet it is not enough to stress that animals used for scientific research receive decent treatment. Sometimes it is indeed necessary to kill animals

so that men may live; it is done constantly for food and clothing. What animal experiments mean in terms of saved lives, cured diseases, prevented epidemics, and far-reaching advances in medical knowledge can best be illustrated by a few examples.

No Insulin Without Dogs

Countless thousands of diabetics are alive, working and well today, because of insulin. But had animal experiments been prohibited by law in Canada in 1921, Dr. Frederick Banting could never have followed up his now famous hunch that this life-saving hormone might be found by tying off the pancreatic duct of a dog and extracting the degenerated gland a few weeks later. All through the summer and fall of 1921, Dr. Banting and his assistant, Charles Best, operated on dogs, tying off the pancreatic duct in some, producing diabetes by removing the whole gland in others, and testing the effect of extracts on them. Scores of dogs had to be operated on before the existence of insulin was proved and before enough was learned about it to permit its large-scale manufacture from the pancreas of cattle.

Experiments on rabbits are needed to this day to test the potency of insulin and to make sure that diabetic patients receive a properly standardized drug. If the use of rabbits or other animals for this purpose were stopped by restrictive laws, each insulin injection would become a dangerous experiment, and severe diabetes would again become the death warrant it was before the discovery of insulin.

Nor Would There Be Sulfonamides

Sulfonamides have so rapidly become a mainstay of modern medicine that we are apt to take them for granted. It is worth while to recall that although sulfanilamide was first described by P. Gelmo in 1908, mankind did not receive its benefits until a quarter of a century later when Dr. Gerhard Domagk gave it to mice suffering from blood poisoning. Thousands of mice, rabbits, dogs, and other animals had to be sacrificed before sulfonamides became available to save the lives of uncounted human patients. As long as modern medical research continues to search for ever more effective and safer drugs,

* From Northwestern University Medical School, Chicago, Ill., and the National Society for Medical Research.

animals will have to be used to test them if man is to reap their benefit.

Penicillin, Too, Would Be Missing

Penicillin, one of the finest achievements of medical science, might still be a useless laboratory curiosity were it not for experiments which Dr. Howard Florey and his associates performed on rats, mice and cats in 1940. There are many substances which can kill germs in test tubes and cultures, and penicillin was just one of them until Dr. Florey and his group showed that, unlike other germ killers, it was both effective and safe in the living animal.

Many a mouse had to die of blood poisoning until penicillin proved its worth and was deemed safe for human patients. And dogs had to be used to determine whether penicillin should be used in appendicitis and peritonitis, because the dog develops peritonitis like man, whereas the mouse, rat and rabbit do not.

Scientists are now searching for other antibiotics to treat infections not influenced by penicillin, such as tuberculosis, and some of their recent discoveries are definitely encouraging. But these promising studies would have to stop if animals could no longer be used to test newly found drugs.

Even the Atomic Bomb

Yes, even the atomic bomb required large-scale animal experiments. Radioactive substances which are used in the manufacture of the bomb emit powerful rays which cause severe illness and death unless proper precautions are taken. The men who developed the bomb did not know just how harmful the new substances

were, and it was impossible to predict whether the protective devices then known were sufficiently effective. Animals were therefore placed in exposed locations and their fate revealed the efficacy of the safeguards used.

A group of physicians from the University of Rochester bred and observed 277,000 mice in the course of these studies which were so effective that not a single man working on this hazardous project was injured by its powerful radiation. Had it not been for these animal experiments, many of the workers on the atomic bomb projects might have suffered crippling injuries and the completion of this gigantic task might have been seriously delayed.

Anemia Is No Longer Pernicious

Until 1926, pernicious anemia invariably killed all of its victims. In that year, however, Drs. George R. Minot and William P. Murphy of Boston announced their discovery that the blood of patients with pernicious anemia could be restored to normal and that patients could stay well indefinitely and lead normal, happy lives—if they were fed enough liver.

This discovery led to the modern treatment of pernicious anemia, which no longer deserves this name since patients under proper medical care can live to a ripe old age. But the discovery of liver treatment might never have taken place, had it not been for some experiments on dogs performed at the University of Rochester in 1925.

→

WELL HOUSED, WELL FED
and carefully attended, experimental animals stay in prime condition under the scientist's care. Both preference and need requires highly sanitary living quarters (right) for these indispensable contributors to medical and pharmaceutical progress.



Drs. Whipple, Hooper and Robscheit bled a number of dogs until they became anemic and then studied the rate of blood regeneration on different diets. Dr. Minot, who had long been interested in pernicious anemia and had tried many kinds of treatment without success, chanced to read the report by Dr. Whipple and his associates. They had found that liver was very effective in speeding blood regeneration in anemic dogs. True, pernicious anemia was a somewhat different kind of anemia, but Dr. Minot tried liver anyway, and the dramatic response of his patients—the first ever to recover from this disease—gave a new, deeper significance to those experiments on dogs.

Chicks and Jaundice

For years, surgeons dreaded operations on jaundiced patients, for they all too often resulted in prolonged and often fatal hemorrhages. The methods used so successfully for staunching bleeding in other patients were of little avail since the blood of jaundiced men and dogs would not clot properly. Knowledge gained from the study of the blood of normal and jaundiced dogs showed that one of the substances, prothrombin, which makes blood clot, was abnormally low in the blood of jaundiced dogs. Since a remedy for this was still not available, the jaundiced patient had to take the risk of bleeding to death because the gall stone which blocked the normal flow of bile had to be removed.

The clue to the remedy of bleeding in jaundice was found in the chicken cages of a Danish scientist, Henry Dam, in 1929. In studying the role of cholesterol in the body economy, he fed chicks a special diet poor in fat-soluble substances. The birds soon developed extensive hemorrhages, for their blood no longer clotted properly. Dr. Dam and his assistants began to look for the substance missing in the diet of these chicks and after several years of hard work discovered vitamin K which is needed for the proper clotting of blood. This vitamin can be absorbed in the presence of bile only and jaundiced patients whose bile cannot flow into the intestine may therefore lack it; hence their dangerous bleeding tendency. But now that pure vitamin K is available—thanks to Dr. Dam's experiments on chicks—it is given by injection and has already saved countless lives.

Surgery and Anesthetics

These, of course, are only a few of the more recent discoveries; however, the story is the same

for all of the discoveries. And nothing has been said about advances in surgery. Again, all of the basic surgical procedures were first worked out on the dog because he is a large animal.

Morton, the discoverer of ether, first tried it on his dog. Ethylene and cyclopropane and pentothal anesthesia were worked out on the dog. All of the barbiturates came from the cooperative effort of the pharmaceutical chemist and the pharmacologist who had to use rabbits and dogs in their work.

In Conclusion

Vital statistics show that babies born in 1943 can expect to live sixteen years longer than babies born in 1902. This means that among the 130,000,000 living in the United States today 2,100,000,000 years of human life have been saved as a result of the application of the discoveries of medical science in one generation. In 1850 the average life expectancy or life span was about forty years; today it is sixty-five years. The use of simple arithmetic and vital statistics shows that there are 22,000,000 persons in the United States today above the age of forty-five years who owe their life to the medical progress made since 1850.

Another example will suffice. In World War I slightly more than 9% of our wounded soldiers and sailors died. In World War II only 3% of our wounded died. Since about 800,000 American boys were wounded, there are almost 48,000 American boys who owe their lives to the medical progress made since 1920.

These facts are enough to show that animal experiments are needed. In fact, animal experimentation is the chief means by which progress is made in the search for the cause, cure, control and prevention of disease. This method must be preserved because it is the only method by which medical science can hope to discover the prevention or cure for the now unpreventable and incurable diseases.

One would think that the legislator would know these facts. But, like other laymen, he does not. For example, a bill to abolish animal experimentation passed the Senate of New York State last year by a vote of thirty-nine to nine. It was finally defeated, however, when the physicians, pharmacists, and nurses of the state properly informed the legislators.

Why are laymen so ill informed regarding how medical and pharmaceutical progress is made? It is because when a new discovery is announced in the newspapers and magazines, the public is told about the discovery but not how the dis-

covery was made. For example, several years ago the newspapers and magazines announced the discovery of the cure of pellagra, namely, niacin or nicotinic acid. But, the news releases did not tell that the discovery was made as the result of finding the cure of "blacktongue disease" in the dog, and that "blacktongue disease"

in the dog is the canine counterpart of pellagra in man.

To educate is a duty of those who know. The pharmacist can do much to enlighten his friends and clients on the subject because he is an influential molder of public opinion, especially in regard to drugs and medicine.

COMMENTS ON ANIMAL EXPERIMENTATION

THE AMERICAN PHARMACEUTICAL ASSOCIATION has just become a member of the National Society for Medical Research, thus joining with other professional groups in this new endeavor to place the true facts on animal experimentation before the bar of public opinion and to combat antivivisectionist pressure wherever it arises. To further this objective the JOURNAL has asked leaders in various fields of pharmacy and medicine to present their views on this subject. The following authoritative statements, together with the excellent paper by Ivy and Zobel in this issue, provide pharmacists and other interested groups with source material to meet the challenge of misinformed minds concerning the value of animal experimentation to pharmacy and the other health professions in their fight against disease.—THE EDITOR

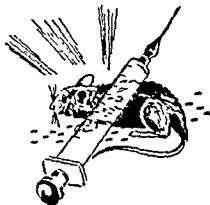
by MAJ. GEN. NORMAN T. KIRK

SURGEON GENERAL OF THE UNITED STATES ARMY

EXPERIMENTAL researches in which animals were used contributed beyond question in saving the lives of thousands of soldiers, the mitigation of an incalculable amount of pain, and the preservation of the high degree of health of the Army.

The benefits of animal experimentation were most notable in shock, because it is the actual or potential result of all serious wounds. A man who cannot be brought out of shock cannot be actively treated for his injuries. Shock is a profound physiologic disturbance. Its clinical manifestations can be studied in the human subject, but its mechanism cannot be. Until its mechanism can be correctly assessed, intelligent therapy to correct it cannot be applied. Shock has been produced in literally thousands of dogs, under controlled conditions which could never be duplicated in human subjects, and the observations made in those studies have provided the physiologic background of the modern concept of shock.

During World War II the administration of plasma as a first-aid measure was the first treatment given to the wounded soldiers in shock to prepare them for operation. When the patient arrived at a hospital for life-saving surgery, plasma was supplemented by whole blood. But again the administration of plasma and of blood had been studied under controlled conditions, in animal experiments. The American soldier received the benefit of those studies; they were applied to him, not tested on him.



Although shock is the outstanding example of the benefits of animal experimentation, similar benefits were obtained in many other phases of military surgery. Gas gangrene had a smaller incidence in World War II than in World War I because better initial surgery was done. But it still occurred and it would have carried a far higher mortality rate than it did had it not been for the studies made on animals. Gangrene occurred in fewer wounded soldiers with vascular injuries, and the results of vascular surgery were better, because experimental vascular surgery had been practiced on dogs.

Neurosurgical procedures were done in World War II which were made possible because of the development of fibrin film and fibrin foam and the testing carried out with them on animals.

Wounds healed more rapidly, and wound infection was less, because wound closure had been studied in dogs.

Burns had a smaller mortality in the second World War than in the first, in spite of a higher incidence and more terrible weapons of destruction, because of the pathologic and therapeutic studies made on animals.

The sulfa drugs and penicillin were first tested on animals, and animal studies contributed to a better understanding of their precise place in war surgery.

Development and production of biologics, smallpox vaccine, diphtheria antitoxin and toxoid, tetanus antitoxin and toxoid, typhoid vaccine, influenza

vaccine, Japanese B encephalitis vaccine, plague vaccine, cholera vaccine and typhus vaccine are essential for the preservation of the health of the Army and protection of soldiers against infectious diseases and in some cases for treatment where infection had occurred. Each of these biological preparations was developed by a long series of experimental researches in which animals were used.

To determine toxicity and safety factors of many preparations such as insecticides, materials for impregnation of clothing, and compounds used for various purposes, animal experimentation is absolutely essential.

It would have been impossible to write the prescription for the Army's excellent diet without

animal experimentation. The body requirement of every basic nutrient in that diet was determined by years of experimentation, mostly with animals. The exact role of vitamin C in preventing scurvy was learned in studies on guinea pigs; nicotinic acid in relation to pellagra was worked out with dogs; protein requirements and essential amino acids were learned about by studying their effects on white mice, rats, rabbits, and monkeys; that thiamin will prevent beri-beri was proved on chickens and pigeons as well as other animals.

The thousands of American soldiers among us today who otherwise might have died are the living examples of the benefits of animal experimentation in the scientific research field.

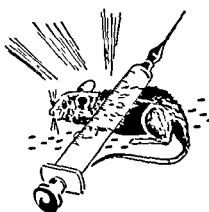
by E. FULLERTON COOK

CHAIRMAN OF THE REVISION COMMITTEE, U. S. PHARMACOPOEIA

LEGISLATION has frequently been introduced to prevent the use of animals in experimental medical practice and in the standardization of important medicines.

Those who advocate this legislation do so, of course, because of a sincere love for dogs and other animals, and in an effort to protect them from unnecessary suffering. Unfortunately their sympathies and feelings are misguided. The facts are that by noting the response of animals to various medicinal substances, pharmaceutical and medical scientists have been able to discover remedies for the curing of many serious diseases. By employing animals to indicate drug activity the manufacturer is able to produce and standardize essential medicines so that they can be safely used with assurance that the action will be sufficiently strong to cure and yet not so strong that they may injure instead of help the patient.

Unfortunately there is no other known way to determine the value or to control the strength of



such important medicines as epinephrine, parathyroid, adrenal cortical extract, digitalis and many others, except by making careful observation of the drugs' action on animals.

It is understood, of course, that animals must be rendered unconscious of pain, by the use of an anesthetic, before tests are made.

The choice must be between the life and well-being of the animal or the life and well-being of men, women and children. Many medical discoveries of recent years would have been impossible if the members of the medical and pharmaceutical professions had not been allowed to determine experimentally the action of various medicinal agents on animals.

The Pharmacopoeia of the United States directs the use of animals in standardizing some of its most important medicines, and the passage of restrictive legislation would seriously hamper the medical profession in its treatment of persons who are seriously ill.

by ADM. ROSS T. McINTIRE

SURGEON GENERAL OF THE UNITED STATES NAVY

MEDICAL science is basically designed to prevent and/or cure the diseases suffered by mankind. That this science has progressed cannot be denied. This can best be appreciated when one compares military medicine of World War II with that of yesteryear. Of the battle casualties who reached medical installations alive, the mortality was 3.9% in World War II as compared with 8 to 12% in World War I.

The problems presented by man in his quest for health are innumerable. The methods of solution are likewise numerous and varied. However, certain ones can only be approached by applying laboratory tests to man through a series of steps. These steps

are fundamental and must be followed in sequence if man is to be benefited and *not* harmed by the products of this research. They are as follows:

1. *In Vitro*: These studies represent the test tube phase of research. There the chemist, the physicist, the pharmacologist and other scientists contribute their knowledge.

2. *In Vivo*: The test tube studies are now carried over to living tissue. Here dosage, toxicity, effectiveness as well as undesirable effects are determined and drugs standardized. However, the transition from the test tube to man must not be too abrupt lest man be endangered.

The type of living tissue for the transition varies

with the problems encountered. In some cases an egg may suffice whereas others require higher and higher orders of the animal kingdom with man as the ultimate goal.

As the preservation of the human race is the objective of medical science, it is frequently at the expense of the lower orders of the animal kingdom. That this is a *basic biological law* cannot be denied. Those who ignore it may go hungry or unclothed if they practice their concepts. Not only is the meat they eat from the lower animal kingdom, but all the

vegetables are composed of living cells. Likewise are woollens of garments and furs they wear from animals sacrificed for human wants or vanity.

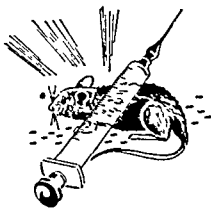
Certain faddists are inclined to let their emotions rule their judgment. In biblical terms "there are none so blind as those who will not see." Surely if they value their own offspring, they will not be so unwise as to stifle science. Some of these same persons or their sons survived World War II because lower animals have been sacrificed to provide answers to the suffering of mankind.

by THOMAS PARRAN

SURGEON GENERAL OF THE U. S. PUBLIC HEALTH SERVICE

THERE can be no doubt that knowledge gained from the intelligent use of experimental animals has contributed greatly to medical progress in the last half century. To realize the truth of this statement, one needs but mention a few diseases—diphtheria, tetanus, pneumonia, diabetes or pernicious anemia—the treatment of which, even to a comparatively satisfactory extent, would have been impossible without the aid of experimental studies in animals.

A few laymen are now asking whether techniques of investigation which have yielded fruitful results in the past are not now outmoded and whether progress may not be made quite as rapidly in the laboratory, without the use of animals. These questions, at first, may seem reasonable. It must be said, however, that those who maintain that animal studies are no longer needed do not fully understand the methods by which most medical problems have been and must be approached. Lacking experimental animals, the research worker's only recourse is to man himself as the test subject. No one would be so callous as to try a new serum, a new drug, or a new treatment on human beings



until its safety and effectiveness have been demonstrated as thoroughly as possible in animals. Although there are minor differences among species it is remarkable how closely man's physiological and other responses parallel those of certain animals.

Neither must there be a false feeling of complacency that all our medical and health problems have been solved, and that we have only to apply the knowledge already gained. There is no disease about which more knowledge is not needed. In the investigation of some, like cancer, the mental diseases, and the diseases of old age, it can hardly be said that more than a hopeful beginning has been made.

Much is being contributed to medical knowledge by such basic sciences as physics and chemistry, but seldom, if ever, do these alone present a complete solution to a medical problem. The developments they suggest must nearly always be tested in the experimental animal before their value and safety in man can be established. Animal experimentation, without question, will contribute more and more to the prevention and the cure of diseases of man.

by JUSTIN L. POWERS

CHAIRMAN, COMMITTEE ON NATIONAL FORMULARY, AMERICAN PHARMACEUTICAL ASSOCIATION

IN their paper on animal experimentation Ivy and Zobel ably marshal the data showing how much we owe to this type of scientific work. The basic issue is clearly drawn: We shall either continue to experiment on animals or, supposedly, we shall experiment on human beings instead. The only alternative is to discontinue development of new therapeutic agents aimed at the many unconquered ills of mankind.

Those who perennially object to animal experimentation apparently do not wish to recognize the necessary alternatives. Or perhaps they mistakenly believe that medical scientists wilfully employ animals in their work without reason or results.

As a matter of fact, researchers would eagerly abandon the use of animals if they could possibly

do so. But unfortunately the best minds in the physical and chemical sciences have not been able to devise a satisfactory substitute for animal tests in types of investigations where animals are now used.

So the laboratory worker continues to invest huge sums in experimental animals and their maintenance; he continues to be harassed by the variable response inherent in physiologic tests; he continues to perform countless animal tests that are time-consuming and difficult.

Even when animal tests have tentatively established the pharmacologic actions, clinical uses and proper dose for a drug, the role of animals in bringing a more effective medicine to the bedside is often not yet completed. Those of us concerned with establishing official drug standards for the protec-

tion of the public must often accept biologic assays, involving the use of animals, as the only satisfactory way of providing the physician and pharmacist with a yardstick for the drug's potency. The use of biologic standardization is never one of choice, since it is usually less reliable, more expensive and more time-consuming than a chemical test would be—if one could be devised.

If the biologic, or animal, assay were banned by

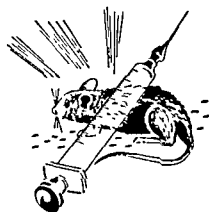
restrictive legislation, the physician would have no way of knowing the strength, and therefore the proper dose, of some of our most valuable drugs.

Anyone who examines with an open mind the evidence presented by Ivy and Zobel, and by other scientists, must certainly conclude that the use of animals in scientific investigation is not only necessary and justified, but also of immeasurable value to every family in time of illness.

by M. H. SEEVERS

PRESIDENT, AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS

THE older generation of pharmacists knows from first hand experience the revolutionary changes which have taken place in the pharmaceutical industry in the last three or four decades. They have seen the long inventory list of crude unstandardized preparations of pharmacologically inert plant extractives and biologicals replaced on their shelves by synthetic organic compounds of known composition and purity and biological preparations of proved activity and standardized potency. As a result of these advances the present day practitioner of medicine is in an enviable position. Today he can safely assure his patient that any modern retail pharmacy can serve his needs with a degree of reliability hitherto impossible.



These radical changes would not have been possible without the use of animals for experimentation, production and biological standardization.

It is difficult for the younger pharmacist or physician to conceive of the practice of medicine without the arsphenamines, the antacids, atabrine, the barbiturates, modern general and local anesthetics, the vasoconstrictors, the antihistamine compounds, the autonomic stimulants and blocking agents, the sulfa drugs and antibiotics, the hormones, the vitamins, vaccines, and immune sera; to mention only a few. How did we get along without modern insecticides and rodenticides? Yet the physician and public health expert had none of these at the turn of the century. It is unfortunate that these benefits, like most of those which we now enjoy, are not fully

appreciated since we have no "at hand" standard of comparison.

Animals have been sacrificed in research, production, and control laboratories to produce these medical benefits. More animals will be necessary for continued investigation, not only to maintain the present level of perfection but to explore new frontiers. The toll of human

life from diseases of the heart and blood vessels, cancer and tuberculosis and the physical and economic loss from arthritis and many other degenerative, infective, and metabolic diseases is still much too great.

The public wants, and in fact demands, better medical care. It is one of our most pressing social and political problems. The average layman is ignorant of the fact that a vote against animal experimentation is a vote against an increase in life expectancy. We as informed persons are largely responsible for this ignorance. We are now reaping the fruits of a passive attitude, in being forced to spend great effort in combatting vicious personal attacks and efforts to promulgate legislation which would obstruct, if not entirely prevent, the only means by which medical advances may be accomplished.

An informed public knowing *why* animal experimentation is necessary and *how* it is conducted will not permit a few irresponsible and self seeking cranks and fanatics to block the road to medical progress. No single group of persons is in a better position to further this nationwide educational campaign than the retail pharmacist.

by AUSTIN SMITH

SECRETARY, COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION

FOR several years the people of this world have seen how devastating can be the destruction created by greed and lust. Because of the publicity given to this holocaust we in this country have been filled with horror and disgust, and we gained a fervent desire to prevent at all cost a repetition of a war that has destroyed countless human beings, their homes, their countries. Pictures flashed on the screen at movies, photographs in magazines, news-

paper stories of torture—all have goaded us to a depth of thinking and planning that involves not just the state or the nation, but the world.

I personally hope that we never will see another war. I hope that the war-torn nations will learn to live again and live peacefully with their neighbors. So does everyone, I believe, who has even the slightest perception of what constitutes his responsibility to mankind. These are people who willingly pledge

themselves to do what they can to prevent and correct disasters; they avow that too many have died, too many are maimed, too many are starving. They want no more of this soul-searing slaughter of men, women and children.

To all of these people I say: "Godspeed. May your fondest hopes of peace be realized. May you see no more suffering wrought by the greed and thoughtlessness of others."

And then, I must add: "But how many of you are planning to sabotage your own dreams of peace and happiness, of freedom from want and from disease? How many of you are planning this very minute to campaign against the furtherance of medical knowledge? How many of you are helping to plan for the continuance of suffering from disease?"

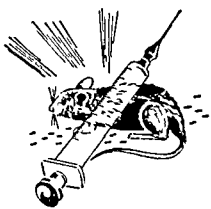
Such questions are certain to provoke a flood of indignant protests in any community; and yet, those who believe that there is no need for animal experimentation and preach such a belief are doing their bit to assure that we continue to suffer from disease. No two scientific groups realize this better than do the physicians and pharmacists. They know that without the use of animals we would not have gained the necessary knowledge to develop and use sulfonamides, penicillin, streptomycin, anesthetics and hormones, to mention just a few of the so-called miracles of modern therapy. They know that if these drugs had been tried directly on humans and deaths had occurred while the safe dosage was being determined, the anti-vivisectionists would have been the first to complain. If this is not likely, then I assume that the anti-vivisectionists will volunteer their

live bodies for experimentation when the supply of animals fails.

The number of lives lost during the last war is almost insignificant when compared to that lost from disease. And unless disease is controlled we will continue to have dissatisfaction and strife as on health largely depends peace. The disease processes that are now shearing away almost unbelievable portions of our population simply must be controlled, and as quickly as possible. To deliberately do otherwise is tantamount to committing cold-blooded murder.

Animal experimentation is necessary for the knowledge that will permit control of disease. No researcher worthy of the name ever subjects animals to cruel treatment. He is as human as the rest of us, and, furthermore, he probably had pets as a child and even now has pets for his children. Perhaps the sight of these children playing in the yard is one reason for his determination to do research—he knows how deep is the faith and trust of the innocent child.

Without research medical progress will come to a standstill. Without animal experimentation research on new preventives and cures might just as well come to a standstill. The problem is really simple—either we have animal experimentation and continued medical advance, or we do not have animal experimentation and turn backwards toward the Middle Ages. I hope the researchers' footsteps never have to turn back. I know they will always be onward if the people of this country view sensibly the problem of animal experimentation—which really is not a problem when viewed sensibly.



CLUE TO STREPTOMYCIN'S MODE OF ACTION

Lack of air and the presence of reducing agents diminish the activity of streptomycin against *E. coli* when tested in vitro. Although the nature of this interference with the action of streptomycin has not been clarified, it may be related to the mode of action of the drug.

In commenting on their experiments at the Temple University School of Medicine, Dr. Amedeo Bondi, Jr., and his co-workers said: "The antibacterial action of streptomycin may be due to its ability to block some enzyme system, oxidative in nature, which is essential only to the growth of susceptible aerobic bacteria, an enzyme system which anaerobes do not possess. If this is true it is possible that the antagonism by the reducing agent is a specific effect upon this streptomycin-enzyme relationship rather than a

direct effect on the streptomycin itself. In fact, addition of the SH compounds and the inorganic reducing agents to a concentrated solution of streptomycin (1000 units/ml.) does not result in material loss of activity. . . .

"It is conceivable that in certain parts of the body where organic reducing agents are present or where a low oxygen tension exists, larger concentrations of streptomycin may be necessary to inhibit the growth of bacteria. Elias and Durso recently reported that typhoid bacilli were isolated from stools in spite of the presence of large concentrations of streptomycin. These investigators suggested the presence in the body of a substance inhibitory to streptomycin. It remains to be seen whether these two phenomena are related."—*Science*, 103 : 399, 1946

NOMINEES TO OFFICES IN THE A. PH. A.—1947-1948

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Harvey Donnell, Portland, Oregon.....Retail Pharmacist
 Sylvester H. Dretzka, Milwaukee, Wisconsin..... Board Secretary
 Charles E. Wilson, Corinth, Mississippi.....Retail Pharmacist

For First Vice-President

A. J. Affleck, Sacramento, California.....Retail Pharmacist
 Charles R. Bohrer, West Plains, Missouri.....Retail Pharmacist
 Henry M. Burlage, Chapel Hill, North Carolina.....Teacher

For Second Vice-President

B. Olive Cole, Baltimore, Maryland.....Teacher
 John B. Heinz, Salt Lake City, Utah.....Retail Pharmacist
 Roy L. Sanford, Enid, Oklahoma.....Retail Pharmacist

For Membership on the Council

L. D. Bracken, Seattle, Washington.....Retail Pharmacist
 Bernard V. Christensen, Columbus, Ohio.....Teacher
 H. A. B. Dunning, Baltimore, Maryland.....Retail Pharmacist and
 Manufacturer
 Henry H. Gregg, Minneapolis, Minnesota.....Retail Pharmacist
 Henry F. Hein, San Antonio, Texas.....Retail Pharmacist
 Ernest R. Jones, Detroit, Michigan.....Pharmaceutical Chemist
 Albert P. Lauve, New Orleans, Louisiana.....Hospital Pharmacist
 George A. Moulton, Peterborough, New Hampshire.....Retail Pharmacist, Board
 Member, Secretary
 Mearl D. Pritchard, Buffalo, New York.....Retail Pharmacist



NEW OFFICERS of the American Society of Hospital Pharmacists are (l. to r.) Walter Frazier, secretary; Sister Gladys Robinson, treasurer; Miss Jennie Banning, vice-chairman; and Hans S. Hansen, chairman.

The Hospital Pharmacist

EDITORIAL

ABOUT THE INSTITUTE ON HOSPITAL PHARMACY.

by LEO F. GODLEY

AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

It was a big success, this first Institute on Hospital Pharmacy. The 136 pharmacists attending the sessions in mid-July unanimously acclaimed it as the greatest movement yet to increase the interest and professional effectiveness of hospital pharmacists. The nostalgia for the classroom created by the classic air of the University of Michigan campus, and the able administrations of the institute faculty, made us look forward to other institutes that must surely come in the future.

The fact that the institute was conducted jointly by the American Hospital Association and the AMERICAN PHARMACEUTICAL ASSOCIATION with the cooperation of the American Society of Hospital Pharmacists is ample indication that more than a passing interest is evidenced by hospitals themselves in the development of a pharmacy-conscious institution. The three administrators on the faculty—Dr. A. C. Kerlikowske of the University of Michigan Hospital, Dr. Malcolm T. MacEachern of the American College of Surgeons, and Dr. W. C. Teufel of the Boston Marine Hospital—all strongly endorsed the use of a well-trained staff of pharmacists in the hospital.

The hospital pharmacists on the institute faculty were the highlights of the program, and rightfully so. They were Clarke of New York, Francke of University of Michigan, Hansen of Grant, Lauve of Charity, Phillips of University of Michigan, Scott of Saint Lukes, and Zugich of Oak Ridge. They spoke authoritatively and interestingly on equipment and manufacturing, parenteral medications and techniques, records and their functions, the formulary and the pharmacy committee, teaching and learning.

Dr. Hugo Hullerman, secretary of the Council on Professional Practice of the American Hospital

Association has conducted many institutes for various hospital groups; and he could think of no gathering where more enthusiasm was shown for so many days so late at night. His master hand in the organization of "institutes" was apparent throughout the week in the completeness of the arrangements and the precision with which the well-rounded program was carried out.

Dr. E. L. Cataline of the pharmacy faculty of the University of Michigan, Dr. Austin Smith of the Council on Pharmacy and Chemistry of the A. M. A., Dr. C. W. Price of the Food and Drug Administration and Dr. W. J. Nungester of the University of Michigan School of Medicine were members of the faculty somewhat removed from hospital pharmacy, but none the less necessary for the completeness and interest of the meeting by virtue of their strategic positions and wide experience in scientific endeavor. They gave much that could never be gleaned from print.

To all this pharmaceutical ebullition by its youngest child, the cooperative planning and experience in program construction of the AMERICAN PHARMACEUTICAL ASSOCIATION was brought by its secretary, Dr. Robert P. Fischelis, who presided at the opening session and conducted the round table on "Pharmacy Administration and Practice." In giving the institute the blessings of the A. P. H. A. he expressed the same general satisfaction and confidence in the future of hospital pharmacy as the least of us.

So well received was it all that talk of another institute in six months has already begun. Other branches of the AMERICAN PHARMACEUTICAL ASSOCIATION would do well to follow this plan as a certain remedy for any lag in enthusiasm and professional energy. Regardless of the frequency, we predict a long succession of hospital pharmacy institutes. We need them.

PLANS FOR A HOSPITAL PHARMACY

TIMELY SUGGESTIONS FOR DESIGN AND EQUIPMENT ARE OFFERED AS EXTENSIVE HOSPITAL CONSTRUCTION AND REMODELING GETS UNDER WAY

IN communities throughout the country hospital construction or expansion is contemplated, is on the architect's drawing board, or is actually started. Planning has been stimulated by enactment of the Hill-Burton bill, which authorizes a national hospital survey and a five-year program of Federal aid for hospital construction. The rapid growth of hospital pharmacy and its increasing importance to a modern institution make it necessary that adequate pharmaceutical facilities be included in projected plans.

Hospital pharmacists can help forestall the type of administrative thinking that considers pharmacy in the restrictive terms of a "drug room," relegated to the basement with equipment poorly suited for providing proper service. The pharmacist, even as the surgeon, needs suitable equipment to translate his skill into optimum medical benefits for the patient.

Thanks to the work of organized pharmacy—particularly the American Society of Hospital Pharmacists—and to the appearance of better

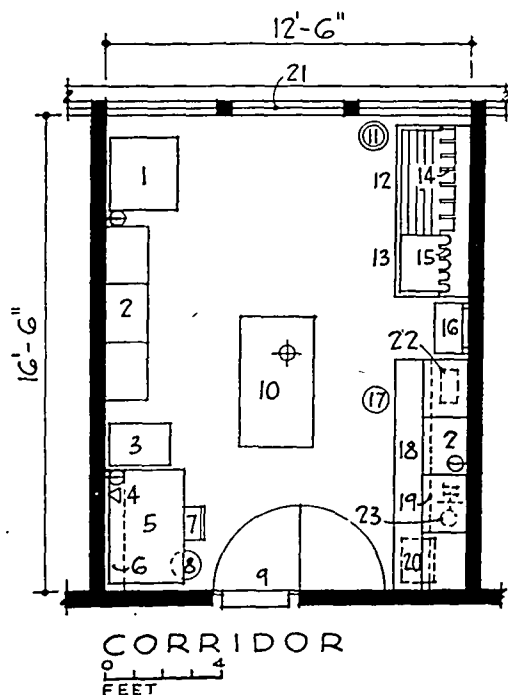
trained, more competent hospital pharmacists, many institutions are giving the pharmacy department a chance to show what it can do.

Advances in therapeutic methods and a broadened concept of hospital service mean changes in the physical requirements of the modern hospital, including the pharmacy. For the finished institution to operate efficiently and economically it should be designed with an understanding of the functional scope of each unit and its relation to other units. This calls for assistance by a hospital consultant and architect, and consultation among members of the hospital staff. The basic floor plans reproduced on these pages should prove of interest to pharmacists, and administrators, where remodeling or construction is contemplated. Any plan must, of course, be adapted to meet the particular needs of the individual hospital.

Designs shown on pages 418 and 419 were prepared by the Hospital Facilities Section of the U. S. Public Health Service* as planning guides for pharmacies in hospitals of 50, of 150 and of 200 beds.

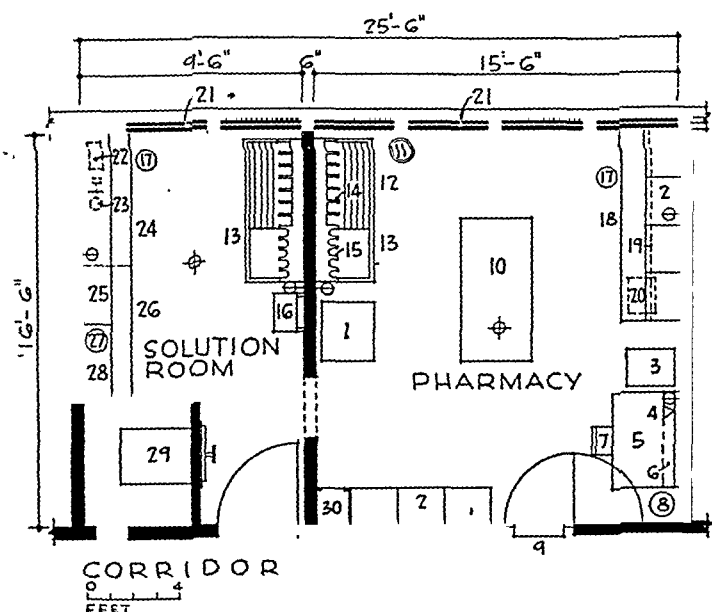
The floor plan for a 50-bed hospital provides

* Floor plans for other units of the institution, as well as for the pharmacy, were published by the U. S. Public Health Service in the journal *Hospitals* (May, 1946).



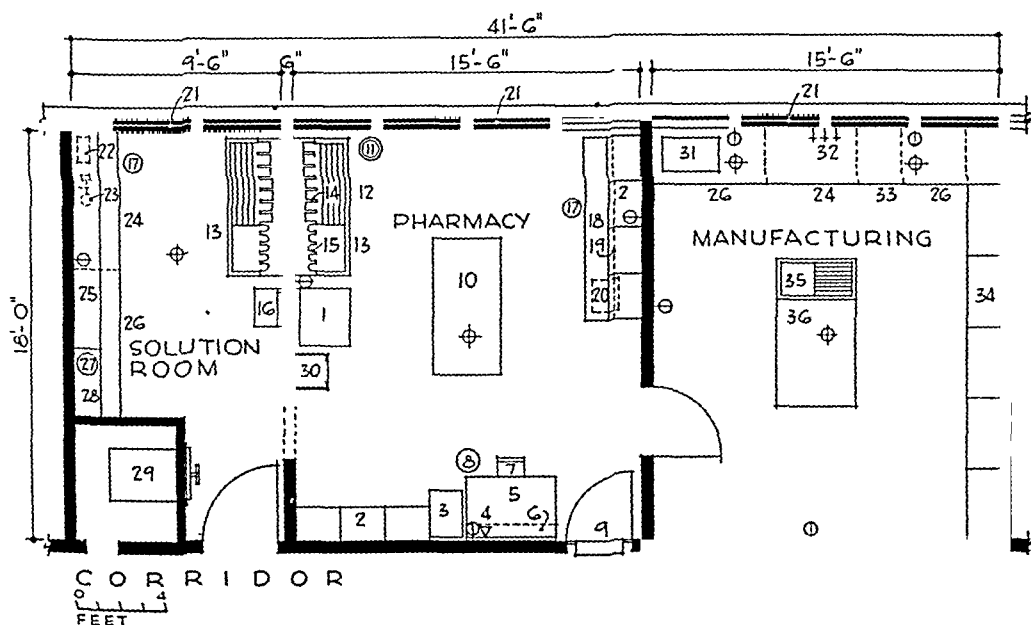
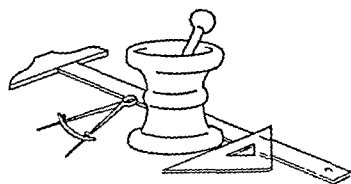
Pharmacy for a 50-Bed General Hospital

1. Refrigerator, 8 cubic feet
2. Drug cabinet
3. Filing cabinet, letter size, 4 drawers
4. Telephone outlet
5. Desk
6. Book shelves
7. Straight chair
8. Waste paper receptacle
9. Dutch door
10. Table, 30 x 54 inches
11. Sanitary waste receptacle
12. Cabinet below drainboard
13. Acid proof sink and drainboard
14. Drawing pegs
15. Graduate rack
16. Double element hot plate on bracket
17. Stool
18. Prescription counter with cabinets below
19. Fluorescent light below cabinet
20. Narcotics safe
21. Window guards
22. Prescription balance with weights
23. Counter scale with weights



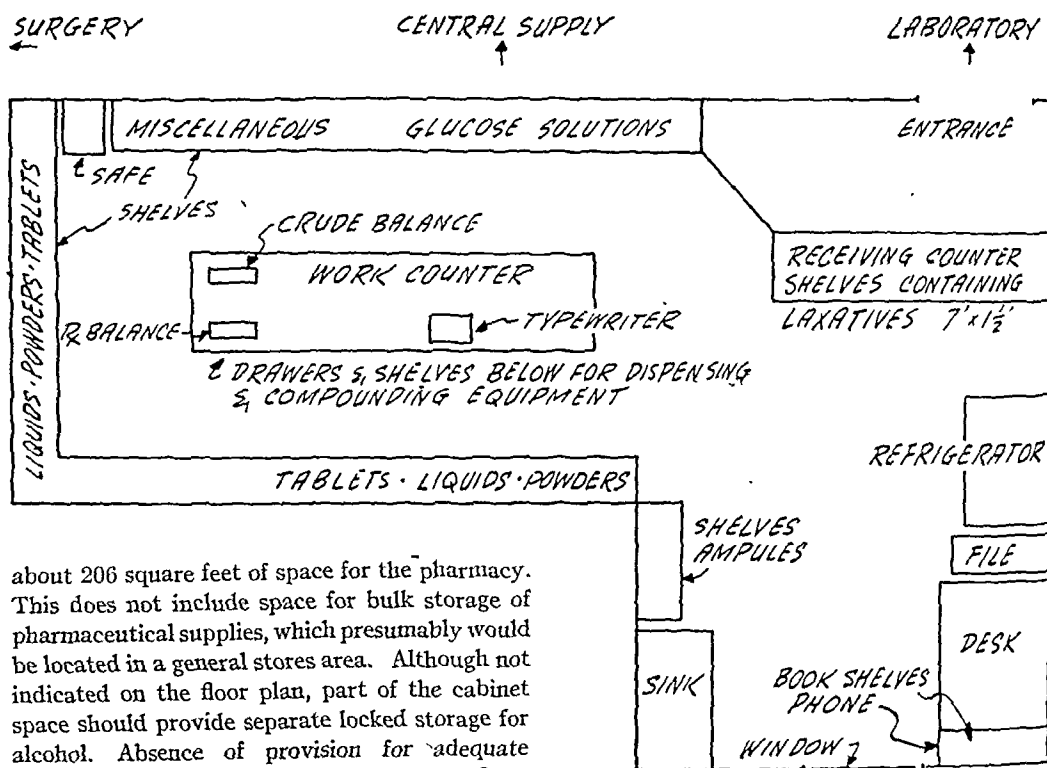
Pharmacy for a 100-Bed General Hospital

1. Refrigerator, 8 cubic feet
2. Drug cabinet
3. Filing cabinet, letter size, 4 drawers
4. Telephone outlet
5. Desk
6. Book shelves
7. Straight chair
8. Waste paper receptacle
9. Dutch door
10. Table, 30 x 54 inches
11. Sanitary waste receptacle
12. Cabinet below drainboard
13. Acid proof sink and drainboard
14. Drawing pegs
15. Graduate rack
16. Double element hot plate on bracket
17. Stool
18. Prescription counter with cabinets below
19. Fluorescent light below cabinet
20. Narcotics safe
21. Window guards
22. Prescription balance with weights
23. Counter scale
24. Counter, 36 inches wide with water resistant top
25. Shelf, 18 inches above counter
26. Cabinets below counter
27. Water still, 5 gal. per hr.
28. Shelf, 36 inches above counter
29. Rectangular sterilizer, 24 x 24 x 36 inches, nickel clad
30. Locker



Pharmacy for a 200-Bed General Hospital

- | | | |
|---|--|---|
| 1. Refrigerator, 8 cubic feet | 14. Drawing pegs | 26. Cabinets below counter |
| 2. Drug cabinet | 15. Graduate rack | 27. Water still, 5 gal. per hr. |
| 3. Filing cabinet, letter size, 4 drawers | 16. Double element hot plate on bracket | 28. Shelf, 36 inches above counter |
| 4. Telephone outlet | 17. Stool | 29. Rectangular sterilizer, 24 x 24 x 36 inches, nickel clad |
| 5. Desk | 18. Prescription counter with cabinets below | 30. Locker |
| 6. Book shelves | 19. Fluorescent light below cabinet | 31. Opaque glass insert in counter |
| 7. Straight chair | 20. Narcotics safe | 32. Gas, compressed air and vacuum outlets |
| 8. Waste paper receptacle | 21. Window guards | 33. Drawers below counter |
| 9. Dutch door | 22. Prescription balance with weights | 34. Adjustable metal shelves above counter height, cabinets below |
| 10. Table, 30 x 54 inches | 23. Counter scale | 35. Sink and drainboard |
| 11. Sanitary waste receptacle | 24. Counter, 36 inches wide with water resistant top | 36. Table with scap stone top |
| 12. Cabinet below drainboard | 25. Shelf, 18 inches above counter | |
| 13. Acid proof sink and drainboard | | |



about 206 square feet of space for the pharmacy. This does not include space for bulk storage of pharmaceutical supplies, which presumably would be located in a general stores area. Although not indicated on the floor plan, part of the cabinet space should provide separate locked storage for alcohol. Absence of provision for adequate balances in two of the other diagrams confirms that these must be considered only as floor plans, and not as indicating the scope of basic equipment.

For a 100-bed hospital, the design for the pharmacy proper has been enlarged to about 264 square feet. To this is added a solution room covering 157 square feet. A water still of 5 gallons per hour capacity and a rectangular sterilizer, 24 by 24 by 36 inches, are recommended for the solution room.

In larger hospitals additional manufacturing space should be provided. The design for a 200-bed hospital sets aside 279 square feet for this purpose, and a like amount of space for the dispensing room. The basic design of the solution room, shown for the 100-bed hospital, is retained and is slightly larger.

The manufacturing room would require a water-resistant floor with drain and ample electrical outlets for connecting manufacturing equipment.

Another suggested plan for a pharmacy in an institution of about 125 beds has been presented by Pharmacist Phyllis Platz of Lincoln, Neb.[†] The L-shaped floor plan shown on this page represents the pharmacy at Bryan Memorial Hospital. Miss Platz offers a timely warning concerning adequate refrigerator space. With increasing use

of biologicals and other thermolabile products, the needs of the individual hospital for cold storage must be carefully considered when purchasing new equipment. In larger institutions a walk-in refrigerator would be advisable.

Platz, Hansen and other writers have particularly emphasized the need for proper location of the pharmacy in relation to other hospital units. A pharmacy in the basement contributes nothing to the objective of reducing hospital traffic. The number of contacts between the pharmacy and hospital staff indicate the need for a central location, preferably near the central service department, laboratory, and X-ray department. Solutions for these departments should be supplied by the pharmacy and some of the procedures conducted in central supply might well be under the supervision of a pharmacist. A motor-driven dumb waiter connected with all floors and the out-patient clinic would further reduce traffic.

Unlike the Public Health Service design, the Bryan Memorial Hospital pharmacy does not include a parenteral solution room, although limited facilities are provided in the main dispensing unit. In Hansen's design for a pharmacy serving a 250-bed hospital (see *THIS JOURNAL*, June, 1946), there is likewise no provision for manufacture of intravenous solutions.

[†]Originally described in *Hospital Management* (June, 1946).

He expresses doubt that it is an economical procedure in most hospitals of this size or smaller. He suggests a pharmacy unit of four rooms. In addition to a dispensing room (260 square feet) and a large general manufacturing room (540 square feet), there is an office and library. Adjacent to the dispensing room is a storeroom with facilities for filling floor baskets.

If the administrator is to adopt suitable plans for a pharmacy he must understand the advantages that accrue to the institution that has an adequately equipped pharmacy and competent pharmacy staff. These are currently being brought to the attention of hospital administrators through a series of articles in the journal *Hospitals*. The series is being published under the aegis of the American Society of Hospital Pharmacists.

In the March, 1946, issue of *Hospitals*, Lauve has discussed minimum pharmaceutical equipment, which should be of particular interest to those contemplating a new or remodeled hospital pharmacy. Water stills, sterilizers, mixing devices and filtration apparatus are among the equipment discussed in which too many hospital pharmacies remain deficient. Like Hansen, Lauve places considerable emphasis on library facilities. This logically develops from the pharmacist's increasingly important role as a source of information on therapeutic agents.

Books and periodicals for the hospital pharmacy were tabulated and discussed in some detail by Ireland in the May, 1946, issue of *THIS JOURNAL*. A basic nucleus of books upon which to build a pharmacy library appeared in the February, 1946, issue. This selective book list which is based on the preferences of a group of pharmacists, may be obtained in reprint form.*

* *THIS JOURNAL*, 2215 Constitution Ave., N. W., Washington 7, D. C.; 10 cents

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cosmetic agencies
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Manufacturing quotas have been lifted and Marcelle hypo-allergenic cosmetics are now able to expand production. As a result we can offer a limited number of protected agencies in unassigned territories to those stores which can qualify. A Marcelle franchise offers—

- Protected agency which builds exclusive business
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- Widely prescribed by physicians . . . they know Marcelle quality
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Marcelle hypo-allergenic cosmetics enjoy national recognition. We provide attractive displays, literature and promotion letters. We detail physicians from your own list, announcing your store is an established Marcelle hypo-allergenic cosmetic agency.

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PRODUCTS RECENTLY ACCEPTED BY THE
A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY

Council descriptions of drug products are published regularly in This Journal as they are accepted. Rules upon which the Council bases its action appeared in the July (7:320) 1946 issue and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 97).

The following additional dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Solution Procaine Hydrochloride 1/2%: 250-cc. bottles. Each 100 cubic centimeters contains procaine hydrochloride 1.5 Gm. and sodium thiosulfate 0.1 per cent as a preservative.

Sulfanilamide (See New and Nonofficial Remedies, 1945, p. 192).

The following additional dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Sterile Sulfanilamide: 5.0-Gm. sterilopes.

ACRIFLAVINE (See New and Nonofficial Remedies, 1945, p. 127).

The following additional dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Enterab Acriflavine Tablets: 0.1 Gm. Each enteric coated tablet is coated with a resin prepared from stearic acid, phthalic anhydride and glycerin.

SODIUM ASCORBATE (See New and Nonofficial Remedies, 1945, p. 624).

The following dosage form has been accepted:

BARRY BIOLOGICAL LABORATORY, DIVISION OF
BARRY ALLERGY LABORATORIES, INC., DETROIT

Solution Sodium Ascorbate: 2 cc. Each 2 cc. contains sodium ascorbate equivalent to 100 mg. of ascorbic acid.

SULFADIAZINE (See New and Nonofficial Remedies, 1945, p. 185).

The following dosage form has been accepted:

WILLIAM H. RORER, INC., PHILADELPHIA

Tablets Sulfadiazine: 0.5 Gm.

DIETHYLSTILBESTROL (See New and Nonofficial Remedies, 1945, p. 428).

The following dosage forms have been accepted:

WILLIAM H. RORER, INC., PHILADELPHIA

Tablets Diethylstilbestrol: 0.25 mg., 1 mg. and 5 mg.

Diethylstilbestrol (in Peanut Oil): 0.5 mg. per cc. and 1 mg. per cc.: 1-cc. ampuls.

ASCORBIC ACID (See New and Nonofficial Remedies, 1945, p. 622).

The following dosage form has been accepted:

PREMO PHARMACEUTICAL LABORATORIES, INC.,
NEW YORK

Tablets Ascorbic Acid: 25 mg., 50 mg. and 100 mg.

CONTRACEPTIVE JELLIES AND CREAMS (See New and Nonofficial Remedies, 1945, p. 355).

The following article has been accepted:

LEHN & FINK PRODUCTS CORPORATION, BLOOMFIELD, N. J.

Lygel Vaginal Jelly: 92-Gm. collapsible tubes. A watersoluble jelly having a pH of 3.4, prepared from the formula:

<i>p</i> -Chloro- <i>m</i> -dimethylhydroxybenzene.....	0.05%
<i>p</i> -tert. Amylhydroxybenzene.....	0.05
Benzalkonium chloride.....	0.10
Lactic acid.....	0.25
Glycerol.....	15.00
Perfume oil.....	0.10
Gum tragacanth and pectin.....	3.50
Water, sufficient to make.....	100.00

Packaged with a Lygel Vaginal Applicator or in refill packages containing a tube of jelly only.

U. S. patent 1,953,413 (April 3, 1934).
U. S. trademarks 343,141 and 248,042.

Actions, Uses and Dosage.—See N. N. R. article on Contraceptive Jellies and Creams.

Lygel Vaginal Applicator: A transparent plastic syringe threaded to screw onto the tubes of Lygel Vaginal Jelly, to permit filling by compression of the tube. The full capacity is 5 cc., the recommended dose.

U. S. patent 2,065,795.

SODIUM ASCORBATE (See New and Nonofficial Remedies, 1945, p. 624).

The following dosage forms have been accepted:

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Solution Sodium Ascorbate: 2-cc. ampuls. Each cubic centimeter contains sodium ascorbate equivalent to 50 mg. of ascorbic acid, stabilized with the equivalent of 0.08 per cent sulfurous acid.

Solution Sodium Ascorbate: 5-cc. and 10-cc. ampuls. Each cubic centimeter contains sodium ascorbate equivalent to 100 mg. of ascorbic acid, stabilized with the equivalent of 0.08 per cent sulfurous acid.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1946, p. 97).

The following dosage form has been accepted:

BARRY BIOLOGICAL LABORATORY, DIVISION OF
BARRY ALLERGY LABORATORIES, INC., DETROIT

Sterile Solution Procaine Hydrochloride 2% with Epinephrine Hydrochloride 1:25,000: 30-cc. bottles. Each cubic centimeter contains procaine hydrochloride 20 mg., epinephrine hydrochloride 0.04 mg. and sodium chloride in distilled water to make an isotonic solution, with sodium bisulfite 1 mg. and chlorobutanol 0.5 per cent as preservatives.

A REPORT OF THE COUNCIL

HUMAN IMMUNE SERUM GLOBULIN.—

This preparation represents a solution of gamma globulin derived from pooled normal human plasma. Its value as a prophylactic against measles rests on the fact that the majority of adults have had measles at some time and retain the specific antibodies. Fractionation of this plasma by an ethanol fractionation method developed in the Department of Physical Chemistry, Harvard Medical School, has made it possible to obtain the antibody-carrying gamma globulin fraction in nearly pure form. Laboratory titrations have shown that the gamma globulin fraction contains a variety of antibodies, while clinical trial shows that it is very high in specific antibodies against the measles virus. In fact, this is the most potent prophylactic yet developed against measles, its only significant defect being that it cannot be administered intravenously because it also contains a concentration of the depressor substance present in normal plasma.

The product does not present anything distinctly new in measles prophylaxis. For a great many years children have been passively immunized successfully against measles with either parenteral whole blood, pooled plasma or serum, convalescent measles serum or immune globulin, the latter being prepared from pooled human placentas. However, because of its high potency and purity immune serum globulin is superior to each of these, except possibly convalescent measles serum.

The globulin is administered within six days after exposure. It is injected intramuscularly and not intravenously. On making the injection, the physician should exercise care to be certain that the needle is not in a blood vessel. The amount that is given for the modification of measles is 0.1 to 1 cc. for patients 6 years of age or under and 2.0 to 3.5 cc. for those over 6 years of age. For the prevention of measles 1.5 to 2.0 cc. is administered to those 6 years or under and 5 to 7 cc. for those over 6 years. It is believed that the usual duration of protection following an effective dose of antibodies is about four weeks.

The supply of immune serum globulin at present being distributed through the American Red Cross represents a surplus by-product resulting from the processing of serum albumin for the Navy from blood donated through the Red Cross to the armed services. The amount available is not great and, once depleted, a future supply is uncertain at this time because of blood supply and production costs.

Typical Days

FROM THE SECRETARY'S JULY DIARY

—1st—

A TYPICAL sultry Washington summer day, with mail and visitors galore. First came Lt. Col. Nelson of the Regular Army Pharmacy Corps to tell of progress in unifying Army medical supply standards; then, Assistant Dean J. Blackwell Smith of the Medical College of Virginia, who thinks warning notices on prescription labels are good, and we disagreed amicably. At lunch discussing this and that about prescription service for VA patients with Comdr. Briggs. Later a session with Attorney Williams, who is drafting the proposed uniform state barbiturate bill. To dinner with Paul Nowell of the headquarters staff at Watergate Inn, discussing fiscal affairs and office management.

—2nd—

A long day's work at the desk, interrupted only by a staff conference at luncheon in a nearby Virginia "Hot Shoppe," and a two-hour discussion in the afternoon with Pharmacy Survey Director Elliott, who asks penetrating questions with a most disarming nonchalance.

—3rd—

Now completing all the routine in preparation for a busy July 4th week end with the International Health Conference. Last-minute details on current problems talked over with the staff at luncheon; then working late at the office with the secretaries, and long after dinner until time to take the B & O midnight sleeper for New York.

—4th—

Early to a meeting of the U. S. delegation to the International Health Conference at the Hotel Astor, presided over by Surgeon General Thomas Parran, and being brought up to date on the developments of the past few days. A most interesting session, with discussion of further U. S. participation in the Interim Commission and the anticipated permanent World Health Organization. Following committee meetings, to Red Bank in time for dinner and to see the display of fireworks across the river.

—5th—

Early on the train to New York for sessions of the World Health Conference on the Hunter College campus, where the United Nations continue discussions expected to lead to a permanent organization for world health.

And now one of the most dramatic incidents of the conference. The presiding officer, a Canadian,

risers to extend congratulations to the delegate from the Philippines. His country just acquired independence as a nation, in accordance with the promise of the United States of America fulfilled on July 4, 1946. The delegate from the Philippines, a kindly scientist, his voice choked with emotion,

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A.V.C. ALLANTOMIDE VAGINAL CREAM—Specific in *Trichomonas vaginalis* infestations and of value in other gynecological conditions. Contains 15% sulfanilamide and 2% allantoin with lactose in a water-miscible, non-greasy base. In 4 oz. tubes with or without applicator.

SULFONASOL—A highly palatable liquid sulfadiazine preparation, for administration to infants, children and medicine-conscious patients. Each fluidounce contains approximately 2 Gm. (microcrystalline) sulfadiazine. In 4 fluidounce and pint bottles.

HESPERIDIN-C—A New and Effective means of maintaining or restoring normal permeability and strength of capillaries by correcting deficiencies in Vitamins P and C. Indicated in hemorrhagic purpura; arsenical erythema and dermatitis; toxic purpura or erythema, and in certain cases of hypertension. In tablets or capsules, each containing Hesperidin (Vitamin P precursor), 50 mg. and Ascorbic Acid, 50 mg. (Vitamin C, 1000 units). In bottles of 100, 500, 1,000 and 5,000.

SULFONAMETS—Pleasant-tasting lozenges for the treatment and prophylaxis of oral and pharyngeal infections susceptible to sulfathiazole action. Each contains sulfathiazole, 2½ gr., allantoin, ¼ gr. and benzocaine, 1/20 gr. In bottles of 100, 500, and 1,000 lozenges.

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says: "When the heart is full the tongue is tied. And with a few words of gratitude upon the recognition accorded this new nation he takes his seat amid a thunderous outburst of spontaneous applause. The Canadian presiding officer then graciously recalls that July 4 was also the birthday of American independence and extends congratulations to the United States upon its own anniversary and the conclusion of its protectorate over the Philippines. Again applause and laughter when the Chairman adds that "both mother and child are doing well." Among all of the incidents of courtesies and acknowledgments extended throughout the life of the conference by one nation to another this one remains with me as the most impressive.

All day at the grind of listening to the reading of proposals and counter proposals translated into French and English but steadily progressing toward the main objective. In the evening to a friendly dinner ably presided over by Surgeon General Parran and greatly enjoyed conversation with some of the leading figures among the health authorities gathered here from various continents.

—6th—

All day at the meetings of Committee II at United Nations headquarters, and then meeting Dr. and Mrs. Powers at Newark for transport by automobile to Red Bank for the week end.

—8th—

Again at the United Nations headquarters in New York for busy meetings of the Health Conference. At lunch with Bob Swain, also briefly chatting with Newcomb, covering many a pharmaceutical topic. At night to dinner at the Chemist's Club and catching up with Washington affairs by telephone.

—9th and 10th—

Two busy days finishing up the committee work at the International Health Conference with many discussions of drug standards on an international level, and deciding on the adequacy of certain words to cover intended meanings. The French still believe their language to be superior for diplomatic purposes, but give us the direct English to tell what we want! And now some parting chats with new friends among the many foreign delegates before departure for Washington.

—11th—

All day at the desk in Washington disposing of accumulated business and preparing for the Pittsburgh convention, taking time out to chat with Maj. W. C. Herbert, who is to receive the Order of the British Empire for highly meritorious service in medical supply work in Greece. The Major is one of the officers in the U. S. Army Pharmacy Corps.

—12th, 13th and 14th—

Three days of intensive work with the staff in preparation for the A. P. H. A. convention, planning the N. F. exhibit and detailed assignments for the various tasks anticipated. A part of Saturday spent

in Baltimore visiting H. A. B. Dunning who happily is being rapidly restored to good health after a serious automobile accident. Late on Saturday afternoon, after a day of preparation for the work of the coming week, departed on the 5:50 B & O for Detroit, meeting Dr. Henry Klein of the U. S. Public Health Service, Dental Division, and Mrs. Klein enroute to Ann Arbor, and discussing dental research at length.

—15th—

Early on the New York Central from Detroit to Ann Arbor and straight to Stockwell Hall on the University of Michigan campus for the opening of the Hospital Pharmacy Institute in which A. Ph. A., American Hospital Association and American Society of Hospital Pharmacists have combined forces to aid hospital pharmacists in keeping abreast of developments in modern techniques and administrative procedures. Presiding at the opening session and meeting many in this interesting group at the social hour in the evening. The enthusiasm of these men and women for their profession is gratifying.

—16th—

A busy day on the U. of M. campus, partly with the hospital pharmacists and partly in visiting old friends including Dean Kraus, Professors Stocking, Cataline, Worrell, and others. In the evening presiding over a spirited round-table discussion on the topics of the day, and then to the station with Don Francke for the train to Pittsburgh which was two hours late.

—17th—

A quick stop-over at our convention city to review progress with George Beal at the Mellon Institute; Stephen Wilson at the University of Pittsburgh; Bill Kirk, convention manager at the William Penn Hotel; and Mrs. Cullison, the efficient housing director at the Convention Bureau. Then departing from the Smoky City for Washington, arriving late with thankful remembrance of the many courtesies extended by Beal and Wilson in speeding the work to make it possible for me to leave Pittsburgh at 1 p. m. on the run.

—18th, 19th and 20th—

Three days of steady work at the desk in preparation for the Council meeting and reviewing with President Moulton the many accomplishments on his recent tour of western states, which began at Utah. Also long talks with our publishers reviewing the National Formulary distribution contracts. On Saturday morning to Baltimore for the meeting of the American Council on Pharmaceutical Education, where Costello presided ably and DuMez recorded and expounded the details of the growing business of this accrediting agency.

—21st—

All this Sabbath day at the office with Council business under review. Several hours spent with Chairman Beal who came in the afternoon to review the agenda and many details, since advance consideration makes Council business flow more rapidly and expedites discussion.

—22nd and 23rd—

These days in the air-conditioned rooms of the Statler Hotel with the Council. Many routine and business matters taken care of, which should relieve the stress of meetings at the convention, and expedite affairs most helpfully. All members present were gratified to note that A. Ph. A. affairs are progressing successfully and the report to the convention will be optimistic. All enjoyed the visit to the National Museum to the Old Apothecary Shop, now permanently housed in splendid surroundings.

—24th, 25th and 26th—

Following the Council meeting, a session with the staff to review new assignments. On July 24 further meetings with Chairman Beal on publication matters and with Chairman Dretzka on House of Delegates business. On July 25 conferred with E. C. Elliott on the Survey and with attorney Williams on barbiturates. And now for the first week-end rest at Red Bank in almost a month.

R. O. G.



Philadelphia College OF PHARMACY AND SCIENCE

Oldest institution of its kind in the Americas. Founded 1821. 43rd Street, Woodland and Kingsessing Avenues, Philadelphia 4, Pa.

Applications now being received for September 1947 and September 1948 entering classes, in courses leading to the Bachelor of Science degree in Pharmacy, Chemistry, Bacteriology or Biology. Graduate instruction also offered.



As leaders in the campaign to suppress and to prevent these infections, ORAL VACCINES are gaining more and more prominence. Outstanding among them is IMMUNOVAC.

IMMUNOVAC is different in that it offers not merely the immunizing properties of whole killed bacteria—the usual endo-antigens—but in addition, the soluble, surface ecto-antigens. This combination, made possible by a distinctive PARKE-DAVIS developed process, provides for increased antigenic potency without an increase in reactive properties.

Physicians favor initiation of the course of treatment during the Fall and continuation of a maintenance dose throughout the period of the year when respiratory infections are most frequently encountered.

THE SEASON OF HIGHEST DEMAND FOR IMMUNOVAC ORAL VACCINE IS ABOUT TO START and should find you prepared. We suggest you check your stock and order an adequate supply.

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enteric coated, are available in bottles of 20, 100 and 500.

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OLD APOTHECARY SHOP OPENED

AFTER well over a year's work, reconstruction of the Old Apothecary Shop has been completed at the U. S. National Museum in Washington, D. C. In July the Shop was opened to the public, with immediate acclaim by the press, public and Museum officials as one of the outstanding exhibits at this national mecca for history-minded citizens.

The exhibit was deposited by the AMERICAN PHARMACEUTICAL ASSOCIATION, and on July 22 members of the A. Ph. A. Council made an inspection trip to the Museum during their mid-summer meeting in the nation's capital. Also in attendance at the inspection were top officials of the Smithsonian Institution.

The photograph above was taken in the main room of the pharmacy, where the apothecary met his patrons. Shown left to right are Earl R. Serles of Chicago; Hugo H. Schaefer of Brooklyn; Sylvester H. Dretzka of Milwaukee, P. H. Costello of Chicago; Robert L. Swain of New York; Alexander Wetmore, secretary of the Smithsonian Institution; George D. Beal of Pittsburgh; Charles H. Evans of Warrenton, Ga.; C. W. Mitman, head curator of the Museum's Department of Engineering and Industries; B. V. Christenson of Columbus, O.; Charles Whitebread of the U. S. National Museum, who supervised installation of the Shop; Henry H. Gregg of Minneapolis, Charles E. Wilson of Corinth, Miss.; Robert P. Fischelis of Washington, D. C.; and John E. Graf, assistant secretary of the Smithsonian Institution.

The photograph at the lower right was taken in the small room off the main part of the Shop, which served as the apothecary's laboratory and study. Inspecting the centuries-old equipment are (l. to r.) George D. Beal, A. Ph. A. Council chairman; Alexander Wetmore, secretary of the

Smithsonian Institution; and Robert P. Fischelis, A. Ph. A. secretary.

Council members warmly commended Smithsonian officials for the expert and careful attention that had been given to reconstruction of the Old Apothecary Shop, which is representative of European pharmacy between the 15th and 19th centuries [see THIS JOURNAL, July, 1945]. The work was under the immediate supervision of Pharmacist Charles Whitebread, curator of the Division of Medicine and Public Health.

Originally imported by E. R. Squibb and Sons, the Shop was given to the AMERICAN PHARMACEUTICAL ASSOCIATION last year.



Wolfson, Sidney B., Chelsea, Mass.

MICHIGAN

Ashbury, Robert E., Detroit, Mich.
Brown, Leo C., Grand Rapids, Mich.
Catlin, Anne M., Detroit, Mich.
Clark, Fred R., Big Rapids, Mich.
Connelly, Nina E., Detroit, Mich.
Davidson, Abraham W., Detroit, Mich.
Davidson, M. D., Detroit, Mich.
Himelick, Robert E., Kalamazoo, Mich.
Hood, Carl, Dearborn, Mich.
Hooper, Ivers D., Detroit, Mich.
Huntsman, James H., Dearborn, Mich.
Hyde, Francis J., Detroit, Mich.
Kulaja, Mary, Detroit, Mich.
Lorch, Alfred H., Detroit, Mich.
Lyon, Laurence T., West Flint, Mich.
McCaughan, Ray, Detroit, Mich.
Norris, William Lyle, Detroit, Mich.
Rassette, Katherine T., Detroit, Mich.
Salmans, Alanson L., Detroit, Mich.
Sister M. Ligouri Thibodeau, Manistee, Mich.
Sivy, John F., Detroit, Mich.
Snell, John L., Detroit, Mich.
Taylor, A. Z., Detroit, Mich.
Wilson, Charles H., Detroit, Mich.
Wright, C. L., Detroit, Mich.

MINNESOTA

Remington, Porter B., Preston, Minn.
Stageberg, Jeanne, Madison, Minn.

MISSISSIPPI

Adams, W. M., Vicksburg, Miss.
Rogers, Dan G., Jackson, Miss.

MISSOURI

Dellande, Armand J., St. Louis, Mo.
Greengard, Louis, St. Louis, Mo.
Holt, Kenneth E., St. Louis, Mo.
Rudi, Francis M., St. Louis, Mo.
Westlake, L. D., St. Louis, Mo.

MONTANA

Braley, Joseph G., Townsend, Mont.
High, Edmund G., Butte, Mont.
Keim, Frank F., Helena, Mont.
Losleben, Roman J., Malta, Mont.
Patten, Edward S., Missoula, Mont.
Peek, Orville W., Missoula, Mont.
Porter, Heber T., Bozeman, Mont.
Reynolds, Bradley A., Helena, Mont.
Stricklin, C. W., Shelby, Mont.

NEBRASKA

Agee, Warren D., Omaha, Nebr.
Alshouse, George B., Bridgeport, Nebr.
Berndt, August, Minden, Nebr.
Brooke, Don A., Hastings, Nebr.
Buetel, Louise, Omaha, Nebr.
Coleman, Herbert L., Omaha, Nebr.
Czerwinski, Ann, Omaha, Nebr.
Dorsey, Lillian, Omaha, Nebr.
Fricke, Fritz A., Plattsmouth, Nebr.
Gilmore, S. Lynn, Central City, Nebr.
Johnson, John, Omaha, Nebr.
Kennedy, Clarence V., Mitchell, Nebr.
Sister M. Godulina, Omaha, Nebr.
Urban, Amiel F., Omaha, Nebr.
Walljasper, Aretas M., Omaha, Nebr.
Wanek, Edward F., Neligh, Nebr.

NEVADA

Allen, J. W., Carson City, Nev.

NEW JERSEY

Braden, A. W., Orange, N. J.

Cox, J. Roger, Woodbury, N. J.
Dixon, A. M., Mountain View, N. J.
Fischer, Raymond W., Newark, N. J.
Friedman, Eugene, Trenton, N. J.
Goldstein, Harry I., Rahway, N. J.
Holmes, Allison D., Jr., Orange, N. J.
Karch, Edward G., Newark, N. J.
Neubarth, Herman, East Orange, N. J.
Ordile, P. Wesley, Vineland, N. J.
Peller, Joseph, Newark, N. J.
Rychel, Richard L., Passaic, N. J.
Scanlon, John T., Roselle Park, N. J.
Singer, Arnold J., Newark, N. J.
Svihra, John, Jr., Rahway, N. J.

NEW YORK

Brasky, Herbert H., Flushing, N. Y.
Cannizzaro, Joseph L., Buffalo, N. Y.
Chandler, W. E., Batavia, N. Y.
Feinberg, Seymour H., New York, N. Y.
Herzog, Arthur C., Buffalo, N. Y.
Leschkowitz, David, New York, N. Y.
Ninger, Fred O., Flushing, L. I., N. Y.
Ott, Arthur T., Tonawanda, N. Y.
Rubach, Stephen N. J., Buffalo, N. Y.
Rudick, Abraham, Bronx, N. Y.
Spar, David Y., Brooklyn, N. Y.
Yesk, Arthur J., Great Neck, N. Y.

NORTH CAROLINA

Whitford, Cleo P., Washington, N. C.

OHIO

Cooley, Ray, Toledo, Ohio
Gasche, George E., Toledo, Ohio
Kerslake, Fred W., Cleveland, Ohio
Lins, Henry A., Akron, Ohio
Mantica, Ralph D., Steubenville, Ohio
McGuire, Robert H., Batavia, Ohio
Miller, Clarence W., Cleveland, Ohio
Oppenheim, Marvin, Cleveland, Ohio
Sandefur, Norman L., Toledo, Ohio
Sohocki, Walter B., Toledo, Ohio
Steinberg, Samuel, Cleveland, Ohio
Thober, William A., Toledo, Ohio
Wheeler, George N., Gallipolis, Ohio
White, Albert, Toledo, Ohio
Zak, A. F., Independence, Ohio

OKLAHOMA

Wright, James L., Oklahoma City, Okla.

OREGON

Meek, Fred, Portland, Ore.

PENNSYLVANIA

Bianculli, Italo A., Pittsburgh, Pa.
Boyden, Hubert E., Philadelphia, Pa.
Busis, David, Pittsburgh, Pa.
Deviney, John F., Philadelphia, Pa.
Gefsky, Hyland L., Pittsburgh, Pa.
Grau, William H., Wilkensburg, Pa.
Heidenreich, W. F., Jr., Pittsburgh, Pa.
Litman, Abe, Pittsburgh, Pa.
Makagon, Dan A., Pittsburgh, Pa.
Martin, Alfred N., Jr., Pittsburgh, Pa.
Mascieri, George A., Philadelphia, Pa.
Mehr, Clara Ade, Clairton, Pa.
Price, Albert, Philadelphia, Pa.
Schiller, Fred, Pittsburgh, Pa.
Seidel, Henry G., Greensburg, Pa.
Sister Mary de Chantal Reilly, Johnstown, Pa.
Stencil, Frank F., Pittsburgh, Pa.

SOUTH DAKOTA

Warrell, James R., White Lake, S. D.

NEW MEMBERS OF THE A. P. H. A.

The American Pharmaceutical Association extends a cordial welcome to the men and women listed below who were accepted for membership during the month preceding July 20, 1946:

ALABAMA

Duncan, Joseph J., Birmingham, Ala.
Gammill, George T., Birmingham, Ala.
Mullendore, M. Gray, Birmingham, Ala.

ARKANSAS

Harrison, James A., Little Rock, Ark.

CALIFORNIA

Bailey, Samuel L., Quency, Calif.
Baker, William B., Palmdale, Calif.
Baltzer, H. H., Hermosa Beach, Calif.
Barnes, Clifford L., San Jose, Calif.
Bennett, Howard Gordon, Wasco, Calif.
Bernfeld, William, Los Angeles, Calif.
Brunet, John, Santa Ana, Calif.
Christian, Vernon C., Pittsburg, Calif.
Copeland, Kern H., Los Angeles, Calif.
Cralego, Joseph A., Los Angeles, Calif.
Dixon, Jos. M., Roseville, Calif.
Downing, John C., San Francisco, Calif.
Foyle, Hilton P., San Diego, Calif.
Frost, Joseph, Hollywood, Calif.
Graham, Orville, Mount Shasta, Calif.
Harrington, Richard A., San Francisco, Calif.
Janzen, Darrell L., Wasco, Calif.
Johnson, Harry V., Carlsbad, Calif.
Johnson, John A., San Francisco, Calif.
Johnston, Stillman B., Fresno, Calif.
Kenyon, Glenn, Palo Alto, Calif.
Lewis, George J., Long Beach, Calif.
Lock, Ernest L., No. Hollywood, Calif.
Lower, John W., Long Beach, Calif.
MacDonald, J. A., Oceanside, Calif.
Maggiore, Maurice J., Oakland, Calif.
Marders, Miles L., Jr., Oroville, Calif.
Marshall, Thomas E., Long Beach, Calif.
McKibbin, Charles F., Venice, Calif.
McRae, Melvin C., Santa Cruz, Calif.
Melmon, Harry C., San Francisco, Calif.
Ogden, Lloyd B., Garden Grove, Calif.
Rabanus, E. M., Coalinga, Calif.
Reinhart, Joseph F., Jr., Los Angeles, Calif.
Rippy, Beverly E., San Mateo, Calif.
Robinson, R. W., Palo Alto, Calif.
Sister Mary Junilla, Los Angeles, Calif.
Strzelecki, Gene Jan, Berkeley, Calif.
Tallent, Edward F., San Diego, Calif.
Thomas, Stanley J., Merced, Calif.
Tripi, Anthony, Bakersfield, Calif.
Wagner, John G., Long Beach, Calif.
Williams, George Wesley, San Francisco, Calif.
Yount, Wallace A., Glendale, Calif.

COLORADO

Bohe, John F., Denver, Colo.
Bryant, Wallace E., Glenwood Springs, Colo.
Burson, Clarence A., Walsh, Colo.
Cooke, E. A., Denver, Colo.
Crawford, Col. E. J., Denver, Colo.
Dansberry, James F., Denver, Colo.
Dupree, Jay Dee, Denver, Colo.
Friesen, Irvin A., Boulder, Colo.
Gebhardt, Robert J., Palisade, Colo.
Kemp, Ralph E., Denver, Colo.
Kincaid, Jess L., Denver, Colo.
Kohler, Frederick W., Colorado Springs, Colo.
Lembach, Anthony J., Denver, Colo.

Lent, James R., Johnstown, Colo.
McFerrin, Clifford J., Denver, Colo.
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Died July 13, 1946

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AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VII, NO. 10

OCTOBER, 1946

CONSECUTIVE NO. 19

Practical Pharmacy Edition

Editor

GLENN SONNEDECKER

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SUPER SABOTAGE

THE independent pharmacist, aided by organized pharmacy, has been striving to improve his position among the health professions and to retain his rightful, unique place in the American economy. We are witnessing a highly significant and insidious effort within a segment of the drug industry to sabotage this upbuilding of retail pharmacy at the level where most people meet the pharmacist in the exercise of his professional functions. We refer particularly to the policy recently announced by United-Rexall Drug Inc. through Justin W. Dart, the firm's nonpharmacist president.

Glittering propaganda brochures for Rexallites insist that their salvation lies in pirating the business of other small shops on Main Street. Diagrammatically they are shown how the pharmacy can take over the business of the hardware, grocery, jewelry store, confectionery, cigar store, five-and-dime, stationer's store, restaurant and department store, not to forget electrical appliances. Once Rexall pharmacies are converted to supermarkets, press reports indicate that self-service operation will be up for consideration.

Without much doubt these objectives can be easily achieved in the various merchandising chains directly owned and operated by United-Rexall. But some 10,000 independent pharmacists, reportedly holding the Rexall franchise, will want to take a long look before jumping into this merchandising maelstrom.

Despite advantages of vastly increased distribution volume which may accrue to the parent United-Rexall firm from this policy, Mr. Dart is probably sincere in also wishing to help the pharmacist who holds a franchise. But any claim that the long range, personal interests of the pharmacist, or of the public, will be in anywise served is certainly open to serious doubt. We are convinced that the attention to supermarket operation required for its success will seriously hinder the retail pharmacist from carrying on normal activities required to maintain his identity as a professional man, and the unique advantages that go with it.

Supermarket drugstore operation requires the pharmacist to compete with grocery supermarkets on their own ground and with their own weapons.

Not a pleasant prospect either for the pharmacist or the profession he has chosen to represent.

The full import of a revolutionary policy of this type should be carefully considered and clearly understood by every pharmacist. The backing and promotion is aggressive and powerful. Whether or not pharmacists take a "free" ride on this Trojan horse, or others of its ilk, will answer an important question: Will preservation of the professional opportunity and service of independent pharmacists involve a vigorous campaign against usurpation of the practice of pharmacy in any of its phases by nonprofessional tradesmen; or will the profession become even more of a house divided against itself, a field for internecine struggle between pharmacies in name and pharmacies in fact?

There can be no objection to better departmentalization and streamlined operations in any pharmacy. We need it. This does not require further, de-emphasis of the pharmacy's basic function as a community health center. Efforts to make supermarkets out of the traditional pharmacy play into the hands of the unqualified who wish to encroach upon the profession. Those who promote or accede to this objective will weaken the pharmacist's rightful claim to legislative restrictions on the distribution of drugs under proper professional supervision and conditions.

It is an obvious and ancient fact that governments throughout the world recognize that a profession so vitally affecting the citizen's health must be practiced under adequate safeguards by professional personnel in a professionally acceptable establishment.

Developments such as those here discussed will make it increasingly necessary for our state boards and legislatures to determine the limits of legitimate pharmacy. An important public question then arises: What is the difference between a supermarket that has added a drug department and a pharmacy which has chosen to become a supermarket?

Obviously pharmacy must object to "superstores" within its own ranks, as well as to the supermarket with a drug department—if we are to be fair to the public and preserve traditional high concepts of professional service.

The independent pharmacist must strengthen his position by increasing emphasis on his unique, personalized health services and role in medical care. Pharmacy constitutes an essential service that must be supplied. If, through sabotage or neglect, such service ever were not supplied adequately in the traditional corner pharmacy, public officials undoubtedly would assure that it be supplied elsewhere.

BUILDING GOOD WILL

Sirs:

Thank you for your nice letter regarding the advertising appearing in the *Beaver Falls News Tribune*. These ads are part of a series furnished to us by Lilly, and I am happy to say that a considerable number of persons have remarked about them.

It is part of our effort to cooperate with physicians and establish good will among the local people. I have felt that being in pharmacy is more than a business, and it is part of the job to guide people of the community to the proper use of drugs under medical supervision.

There are too many in our profession, and I think also in the medical profession, who are apt to overlook the main purpose of their education: to keep the welfare of the patient at heart. It is such things thrown aside for the almighty dollar that cause demand for socialized medicine, etc.

Beaver Falls, Pa.

AL KAUFMAN

RADIO'S OBJECTIONABLE COMMERCIALS

Sirs:

In Monday's *Washington Post* I happened to see reported that your Association is advocating curbing the very unpleasant form of advertising now coming over the radio, particularly regarding some drug products. It is to be hoped that you are successful, for it is a disgraceful thing.

I for one make it a rule never to purchase articles or products improperly advertised. . . . It is time someone with a voice loud enough to be heard, like your Association, should speak.

Washington, D. C.

ALICE CHADWICK

A PHARMACIST-PHILATELIST

Sirs:

I am a young British hospital pharmacist, aged twenty-one. I would very much like to correspond with an American hospital pharmacist who is also a philatelist. Can you help me? The address is: Pharmaceutical Department, Cardiff Royal Infirmary, Newport Road, Cardiff, Glamorgan, South Wales, England.

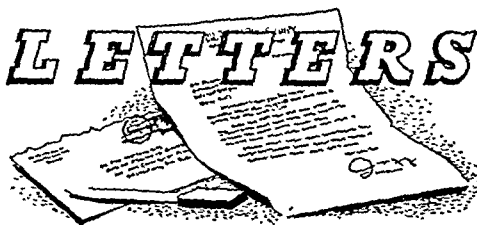
RAYMOND E. M. DAVIES

LIQUOR SALES AND PHARMACY INCOMPATIBLE

Sirs:

The sale of liquor has as much place in a retail pharmacy as a bar has in a physician's office. Yet this condition exists as a reality in a number of states.

Sometimes a pharmacy puts such an emphasis on the sale of liquor that it is a complete misnomer to call it a pharmacy. This practice is as degrading to the profession as any other one can think of. In certain communities an entirely professional pharmacy may be financially unsound, but surely a pharmacist with some pride in his profession can find other means of supplementing his sales without resorting to the sale of liquor.



The pharmaceutical associations and state boards could do much to remedy this particular situation. The professional status of pharmacy must not be jeopardized. Pharmacy and liquor are incompatible under one roof.

FRANK P. PIRANEO
Brooklyn, N. Y.

NO BETTER OCCUPATION

Sirs:

After fifty-two years in retail pharmacy I have decided to retire. . . . In my long association with retail pharmacy I have never regretted that I chose the occupation that has been my life's work. I have experienced many changes: hours from 14 to 8 a day; salary from \$18 to \$75 a week.

I can truly say that I know of no better occupation. But the druggist must be a druggist in every sense of the word, and willing to work. He must operate a *drugstore*, not a department or accommodation shop.

I am proud of being a member of the AMERICAN PHARMACEUTICAL ASSOCIATION, and my best wishes for its future.

Chicago, Ill.

JOHN J. SAMUELS

APPRECIATIVE SUPPORT

Sirs:

I am enclosing \$5 for dues and the *Practical Pharmacy Edition* of the JOURNAL. The JOURNAL has been a splendid help to me while in the Army, and I don't want to be without it now that I am back.

We appreciate the fine work you are doing for us and it is a source of pride to be a member of the A. PH. A.

Hattiesburg, Miss.

WILLIAM K. EDMISTON

Sirs:

. . . I am glad to enclose my check for membership. The JOURNAL alone is worth that much to me, to say nothing of having a national organization at our seat of government to watch out for our interests.

Please be assured that I shall deem it a pleasant duty to renew my membership each time I receive a notice requesting it.

Maysville, Ky.

REX PARKER

STRAIGHT FROM HEADQUARTERS



by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

DISCUSSIONS WHICH LED TO ACTIONS

REPORTS from all groups represented at the Pittsburgh convention of the AMERICAN PHARMACEUTICAL ASSOCIATION seem to be unanimous in their approval of the procedures, the program and the accomplishments of this first postwar convention in which all branches of pharmacy were represented.

In previous paragraphs in this column we pointed out some of the problems which confront the profession at this time, and we indicated that the House of Delegates of the AMERICAN PHARMACEUTICAL ASSOCIATION provided the best forum in American pharmacy for the discussion of these problems.

It is of interest to review the ten listed in the August number of *THIS JOURNAL* (page 339), and the actions taken at the convention which may be briefly summarized as follows:

It was stated that constructive action would be necessary in determining ASSOCIATION policies with respect to the enrollment of pharmacy students. The convention expressed strong disapproval of the acceptance by colleges of pharmacy of student bodies in excess of classroom, laboratory and teaching facilities. It likewise expressed vigorous opposition to any legislation which would in any wise lower, impair or damage educational and licensure standards now in effect.

It was stated that improvement of pharmacy faculties required attention. The convention strongly urged colleges of pharmacy to look upon inadequate staffs of teachers, which had to be employed during the war period when manpower in the teaching field was as short as in other fields, as a temporary expedient. It was further urged that all teachers that do not possess satisfactory technical and scientific qualifications be replaced as soon as feasible.

The necessity for constructive activities in determining policies with regard to control of outlets for the distribution of drugs was emphasized. The convention recorded itself against any lowering of pharmaceutical standards and

endorsed the pharmaceutical survey which will include a study of this situation.

BARBITURATE REGULATION

THE necessity for constructive activities in determining policies for the control of the distribution of barbiturates was high on the list of subjects to be considered. The convention recorded itself against Federal legislation in this field and urged that pharmacists and pharmaceutical organizations give their earnest support and cooperation to the enactment of adequate state legislation for the control of use and distribution of barbiturates. This subject evoked more debate in the House of Delegates than any other. There was general agreement that American pharmacy must support a program which will record its practitioners on the side of the public interest without adding unnecessarily to the restriction of the legitimate use of these valuable drugs.

It is expected that the ASSOCIATION will join the efforts of other pharmaceutical organizations operating through the National Drug Trade Conference in working out provisions for a uniform state act to control the distribution of these drugs. A number of meetings of representatives of the National Drug Trade Conference have already been held to effectuate this purpose.

SICKNESS INSURANCE

SICKNESS insurance with special reference to the extent and method of coverage of pharmaceutical services was given consideration and the ASSOCIATION reaffirmed its previous position which pledged it to cooperate with any adequate plans to extend medical care which utilizes existing medical facilities and which guarantees the right of free choice of pharmacist, dentist, nurse, physician, or other medical practitioner.

ARMY PHARMACY CORPS

IT WAS stated that acceptance of a place in the proposed medical service units in the Army and Navy would call for active discussion. The

convention had the benefit of a clear statement of objectives on the part of the Surgeon General of the Army and an equally clear statement of the opposition of pharmacists to any plan for pharmaceutical service in the Army which would abolish the Pharmacy Corps created by Act of Congress in 1943. The latter statement was made by Dr. R. L. Swain at the completion of Surgeon General Norman T. Kirk's address. The official action of the ASSOCIATION embodied in a resolution calls for strong expression by the AMERICAN PHARMACEUTICAL ASSOCIATION in favor of maintaining and activating the Pharmacy Corps in the Army and vigorous opposition to any attempt to modify or disregard the intention of Congress when it passed the law creating the Pharmacy Corps.

There is considerable evidence that the attitude of the Surgeon General of the Army toward pharmacy's contribution to the welfare of the soldier has undergone a change for the better. General Kirk has publicly announced the functions which pharmacists are competent to perform and he has given assurance that pharmaceutical service in the Army will be under the supervision of pharmacists although he also emphasizes the fact that the medical department of the Army intends to retain full control over all medical and auxiliary medical services. Compromising the means of arriving at the objectives of the pharmaceutical profession and those of the Surgeon General, which are certainly in unison as far as the welfare of the men in the Army is concerned, will require a high brand of statesmanship on both sides. It hardly seems necessary to require the sacrifice of the Pharmacy Corps in order to accomplish the Surgeon General's objectives for better pharmaceutical service to the soldier.

THE PHARMACEUTICAL SURVEY

PERHAPS no topic received greater attention in more places during the convention than the pharmaceutical survey now being conducted by the American Council on Education under the direction of Dr. Edward C. Elliott. No organization, section or affiliate of the AMERICAN PHARMACEUTICAL ASSOCIATION which held separate meetings at Pittsburgh failed to contribute to the pharmaceutical education of the former president of Purdue. He is an apt pupil. He knows how to obtain essential information. He will doubtless demonstrate that he is a past master at consolidating factual data into terse expressions denoting things as they are and not as they seem. One can look forward to the revelations of this survey in the expectation that it will stimulate thought, action and new approaches

to old problems in the interest of better service to those who require medical care. The ASSOCIATION expressed its earnest approval of the survey and pledged its full cooperation to those concerned with the progress and success of this project.

FOOD AND DRUG REGULATIONS

THE ASSOCIATION listened intently to the message brought to it by Commissioner Dunbar of the Food and Drug Administration. There was some disappointment at the one-sided presentation of the discussion of warning notices on the labels of prescriptions. Fortunately Dr. Austin Smith, Secretary of the Council on Pharmacy and Chemistry, was present when an editorial appearing in the *Journal of the American Medical Association* with regard to warning notices on prescriptions on thiouracil was quoted in support of the position of the Food and Drug Administration in favor of such warnings on labels of prescriptions. Dr. Smith promptly pointed out that the editorial referred to was an informative statement to physicians intended to emphasize the pharmacist's position in carrying out the mandates of the Food and Drug Administration with respect to such labeling. Dr. Smith emphasized that it was not an editorial in favor of upsetting the age-old relationship between physician, pharmacist and patient which calls for the labeling of a prescription in accordance with the directions of the physician.

At no time was the improved relationship between organized medicine and organized pharmacy more clearly demonstrated than in the participation of the representative of the American Medical Association in this and other discussions in the House of Delegates. We are very thankful to the Council on Pharmacy and Chemistry of the American Medical Association for making it possible to have Dr. Smith present at our convention to participate in discussions involving cooperation between the professions of medicine and pharmacy.

PRACTICAL IDEALISM AND GOOD SENSE

AT Pittsburgh in August, 1946, the pharmacists of America, through their chosen delegates and in the general and sectional meetings, came to grips with many outstanding and difficult problems in addition to those mentioned.

As we survey the results of discussions and review the mandates given to the administrative officers we can take pride in the practical idealism and good sense displayed in meeting issues of far-reaching importance to American pharmacy.

DRUG TRENDS AND THE NEW NATIONAL FORMULARY*

by JUSTIN L. POWERS

CHAIRMAN, COMMITTEE ON NATIONAL FORMULARY, AMERICAN PHARMACEUTICAL ASSOCIATION

EIGHTH N. F. REVISION REFLECTS BASIC CHANGES IN DRUG THERAPY ... DATA PRESENTED ON ADMISSIONS

FAR-REACHING changes in types of official drugs used have taken place during the past several years. Complex galenical preparations, and crude botanical and animal drugs have been supplanted by highly purified extractives and synthetics. With these changes, prescriptions calling for the combination of several drugs into a single preparation have gradually disappeared to be replaced by more simple forms of medication. These trends are unquestionably basically good and progressive, and the effectiveness of the newer drugs today makes the chance of rapid and complete recovery from illness much greater.

The changes in types of basic drugs and preparations during the past fifty or sixty years are reflected by the changes which have occurred in the content of the National Formulary and of the United States Pharmacopœia.

The general trends in types of drugs and certain preparations are presented graphically in Figures 1 to 4. These trends will be particularly noticeable in the new 1946, eighth edition of the National Formulary. During the revision program of the seventh edition of the National Formulary which has been official since November, 1942, 176 monographs were deleted. At the same time, approximately 100 drugs, previously unofficial, were tentatively admitted to N. F. VIII. Of this number, monographs including

* Adapted from a report in the *Bulletin of the National Formulary Committee*, 14: 121, 1946.

PERCENT OF BASIC DRUGS

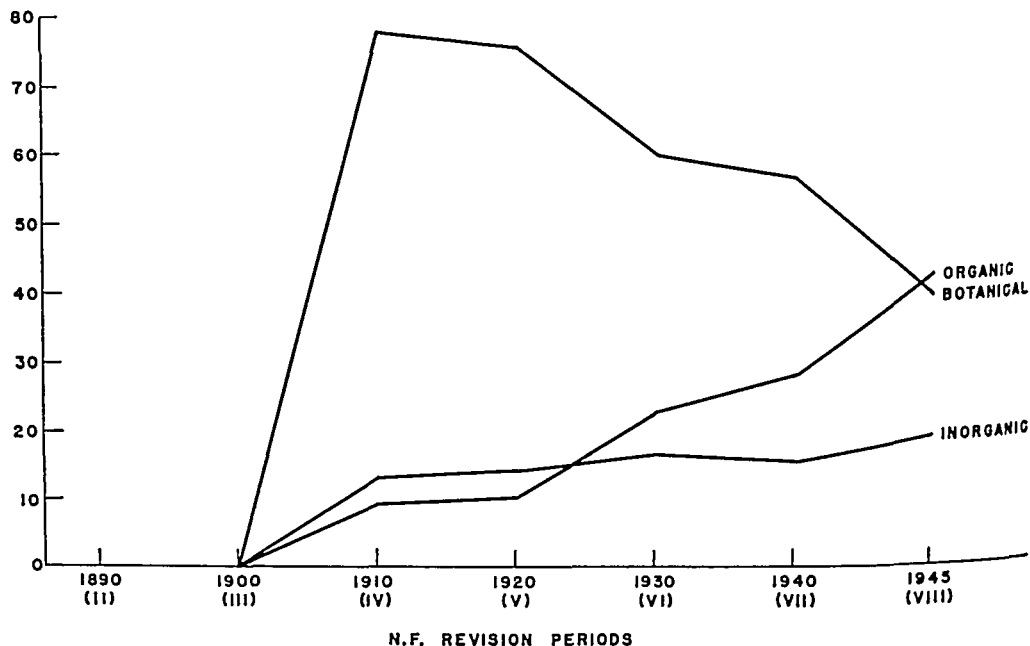


FIGURE 1—TRENDS IN N. F. BASIC DRUGS, 1900-1945: The graph illustrates the persistent downward trend in botanicals through the years, with a compensatory increase in organic chemicals. The percentage of inorganic medicinals has undergone no great change since 1910. In charting N. F. trends, all crude drugs of vegetable and animal origin were classed as botanicals, and well characterized, pure organic compounds of either natural or synthetic origin were classed as organic. Note that the graph indicates only basic drugs, and that prior to 1910 N. F. listings were, with few exceptions, only preparations.

official specifications have been developed for 82, which appear in the new edition.

Acting simultaneously with the Committee on National Formulary, the Subcommittee on Scope of the United States Pharmacopœia voted to discontinue standards in U. S. P. XIII for more than 100 U. S. P. drugs. The majority of these were adopted for inclusion in N. F. VIII because the Committee believed many of the drugs possessed varying degrees of therapeutic merit, and will continue to be used for some time in the future.

All new admissions to the National Formulary whether representing previously unofficial drugs or those from U. S. P. XII have been classified according to their actions and uses. No attempt will be made to discuss in detail each new admission, but reference may be made to one or more drugs in each of the several classifications. In the series of tables, the drugs marked with an asterisk are from U. S. P. XII.

Table I lists drugs acting on the gastrointestinal tract; parasympathetic drugs; and flavors, vehicles and pharmaceutical necessities. All of

TABLE I—New Admissions to N. F. VIII

DRUGS ACTING ON GASTROINTESTINAL TRACT

Castor Oil Capsules
Magnesium Hydroxide
Magnesium Hydroxide Tablets
Magnesium Phosphate, Tribasic*
Magnesium Phosphate, Tribasic Tablets*
Mercury with Chalk*
Nux Vomica*
Nux Vomica Tincture*
Papain
Potassium Bitartrate*
Rhubarb Extract*
Sodium Bicarbonate and Calcium Carbonate Powder (Sippy No. 1)
Sodium Bicarbonate and Calcium Carbonate Tablets (Sippy No. 1)
Sodium Bicarbonate and Magnesium Oxide Powder (Sippy No. 2)
Sodium Bicarbonate and Magnesium Oxide Tablets (Sippy No. 2)
Sterculia Gum

PARASYMPATHETIC DRUGS

Belladonna Root*
Homatropine Methylbromide
Homatropine Methylbromide Tablets
Hyoscyamus Extract*
Stramonium Capsules

FLAVORS, VEHICLES AND PHARMACEUTICAL NECESSITIES

Almond Oil, Bitter*
Althea*
Anise Spirit*
Chloroform Water*
Eriodictyon*
Eriodictyon Fluidextract*
Honey*
Malt Extract*
Sherry Wine



JUSTIN L. POWERS, N. F. CHAIRMAN

the drugs and preparations in these three classifications are well established and well known, requiring no particular comment or elucidation. It will be noted from Table I that for the first time, definite standards for Sippy Powders are officially recognized under appropriate names and with definite formulas and standards for strength, quality and purity.

Among the pharmaceutical necessities, the need for standards for Sherry Wine might be subject to question. Early editions of the National Formulary included a formula official under the name of Wine of Beef and Iron, but more popularly known as Beef, Iron and Wine. This formula was discontinued when the fifth edition of the National Formulary published in 1926 became official. It was replaced by a formula for an elixir of beef and iron containing no wine. This product never served as a satisfactory replacement for the original preparation. Accordingly, the Committee on National Formulary admitted to N. F. VIII a monograph for Beef, Iron and Wine patterned after the original N. F. formula, but with the quantity of ferric ammonium citrate increased from 10 Gm. per liter to 50 Gm. per liter. The new preparation will contain, in an average dose of 8 cc., 0.4 Gm. of ferric ammonium citrate. The new mono-

PERCENT OF
BASIC DRUGS

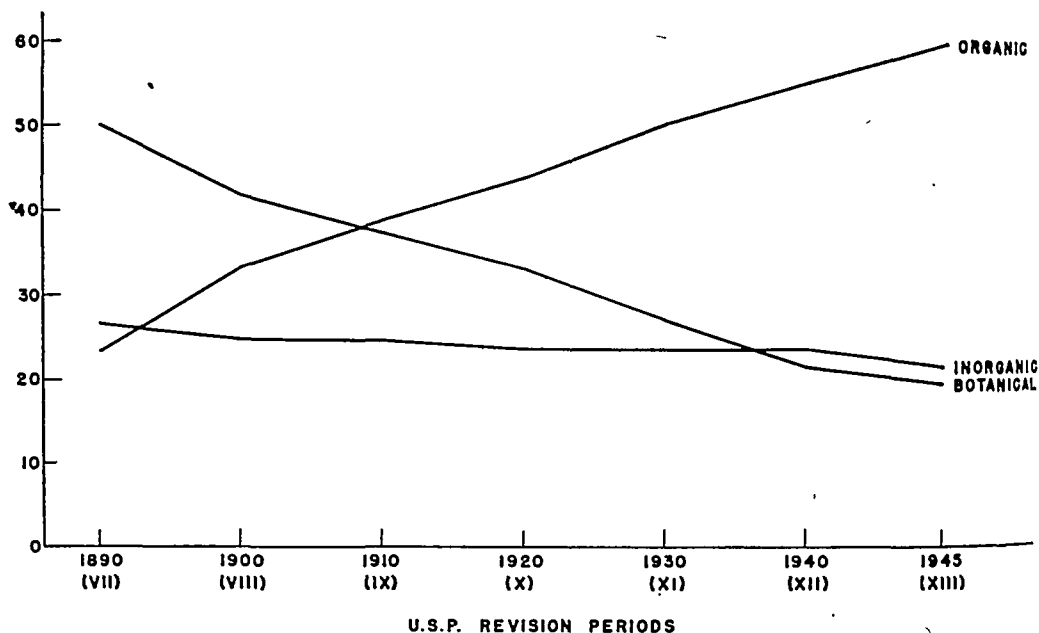


FIGURE 2—TRENDS IN U. S. P. BASIC DRUGS, 1890–1945: Although the basic trends in the U. S. P. became apparent earlier than in the N. F. (Fig. 1), there is an interesting parallel which reflects changing concepts of drug therapy. It is of significance to note how slight has been the fluctuation in the percentage of inorganic medicinals.

PERCENT OF
PREPARATIONS

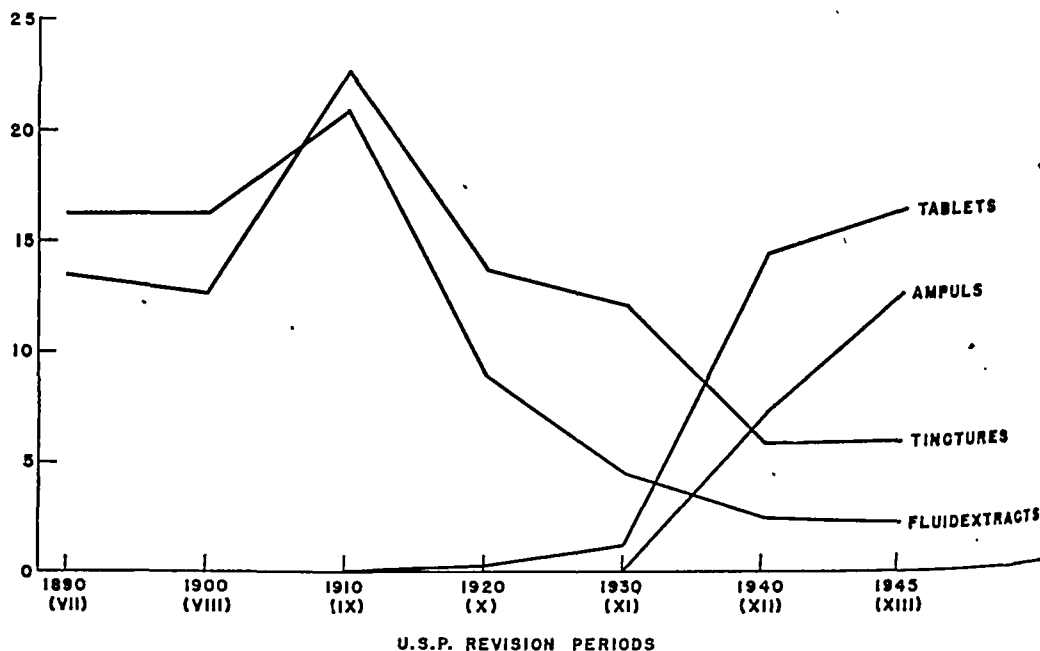


FIGURE 3—TRENDS IN SOME U. S. P. PREPARATIONS, 1890–1945: Here are shown the trends in selected groups of pharmaceutical preparations officially recognized by the Pharmacopœia. By 1910 the tinctures and fluidextracts had reached their peak, and then began a rather sharp decline. In U. S. P. XIII only 6% of all preparations will be tinctures and less than 3% fluidextracts.

graph also provides standards for strength not available in the original monograph.

In Table II is listed a number of antiseptics and germicides which are new to the National Formulary. Among these it will be noted that a monograph on Alcohol Rubbing Compound has been admitted to N. F. VIII. Although the enforcement of standards for this widely used product comes within the province of the Alcohol Tax Unit of the Bureau of Internal Revenue, it was believed by the Committee on National Formulary that official standards were desirable as a possible aid in maintaining standards of strength and quality.

Halazone and Succinchlorimide are both used for the disinfection of water. Suitable standards to insure the quality and strength of the chemicals and their tablets are included for the first time in any official book of drug standards.

It will be noted that three iodine preparations from the U. S. P. XII have been admitted to N. F. VIII. Two iodine tinctures are recognized in U. S. P. XII, one under the name Tincture of Iodine and containing 7% of iodine in a hydro-alcoholic solution of potassium iodide, and the

TABLE II—New Admissions to N. F. VIII

ANTISEPTICS AND GERMICIDES

Alcohol Rubbing Compound
Chloramine-T*
Dwarf Pine Needle Oil*
Halazone
Halazone Tablets
Iodine Ointment*
Iodine Solution*
Iodine Tincture, Strong*
Isopropyl Alcohol Rubbing Comp.
Mandelic Acid*
Mercuric Cyanide
Mercury Bichloride*
Mercury Bichloride, Large Poison Tablets*
Mercury Bichloride, Small Poison Tablets*
Nitromersol (Metaphen)
Nitromersol Solution
Nitromersol Tincture
Phenylmercuric Chloride
Phenylmercuric Nitrate
Pine Oil
Pine Oil Emulsion Concentrate
Proflavine Dihydrochloride
Proflavine Sulfate
Resorcinol Monoacetate
Silver Chloride, Colloidal
Silver Iodide, Colloidal (Neosilvol)
Silver, Strong Protein*
Succinchlorimide
Succinchlorimide Tablets
Thymol Iodide*
Trinitrophenol*

PERCENT OF PREPARATIONS

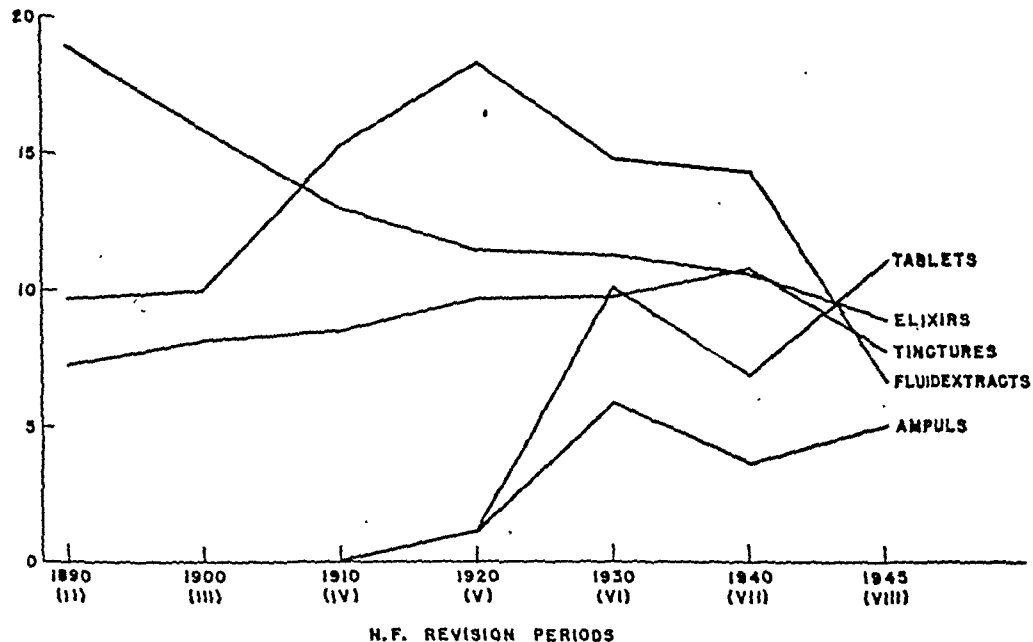


FIGURE 4—TRENDS IN SOME N. F. PREPARATIONS, 1890-1945: Although the demise of fluid-extracts and tinctures is reflected in the N. F. as in the U. S. P. (Fig. 3), the change was not so precipitous since standards for some former U. S. P. products remained official for a time in the N. F. The pioneer work of the National Formulary in establishing official standards for ampuls is illustrated by the sharp increase in these preparations percentagewise in N. F. VI. A large number of the ampul monographs were later adopted by U. S. P. XII, which accounts for the sharp drop in preparations of this dosage form official in the following edition of the N. F.

other under the name Mild Tincture of Iodine containing 2% of iodine in a hydro-alcoholic solution of sodium iodide. The Tincture of Iodine containing 7% of iodine was not admitted to U. S. P. XIII but the monograph on Mild Tincture of Iodine was admitted under the title Iodine Tincture. It will be recalled that previous editions of the National Formulary, including N. F. VII, contained a monograph on a veterinary preparation under the name Stronger Tincture of Iodine. This preparation, according to authoritative opinions obtained from veterinarians, is no longer used. It was, accordingly, not admitted to N. F. VIII. The current U. S. P. Tincture of Iodine containing 7 per cent of iodine was admitted to N. F. VIII, however, under the name Strong Iodine Tincture. A note will be included in the monograph specifying that when Tincture of Iodine, U. S. P. XII is ordered, Strong Iodine Tincture is to be dispensed. It is hoped that no confusion will result from the new nomenclature of the two iodine tinctures.

The twelfth revision of the Pharmacopœia

TABLE III—New Admissions to N. F. VIII

PARASITICIDES AND ANTI-INFECTIVES

Acetarsone
Acetarsone Tablets
Carbarsone Tablets
Chaulmoogra Oil*
Ethyl Chaulmoograte*
Iodochlorohydroxyquinoline (Vioform)
Iodochlorohydroxyquinoline Tablets
Mercuric Salicylate*
Mercuric Salicylate Ampuls*
Mercuric Succinimide
Pamaquine Naphthoate (Plasmochin)*
Pyrethrum
Quinine Ethylcarbonate*
Quinine Sulfate Capsules
Sodium Cacodylate*
Sodium Propionate
Stibophen
Stibophen Ampuls
Sulfapyridine*
Sulfapyridine Sodium, Sterile*
Sulfapyridine Tablets*
Turpentine Oil Emulsion*

SERA

Antimeningococcic Serum*
Antipneumococcic Serum*
Human Measles Immune Serum*
Human Scarlet Fever Immune Serum*

EXPECTORANTS

Pine Tar Syrup*
Terpin Hydrate*

ANTIASTHMATICS

Ephedrine Sulfate and Phenobarbital Capsules*
Ephedrine Sulfate Capsules*
Potassium Nitrate*

also included a 2% solution of iodine in a water solution of sodium iodide under the name Solution of Iodine, in addition to Lugol's Solution, with the title Strong Solution of Iodine. The 2% iodine solution was not admitted to U. S. P. XIII, but will be included in N. F. VIII. This preparation is claimed to be as effective as either of the iodine tinctures as a general antiseptic. If properly promoted, it is possible that it may become more widely used than at present.

Isopropyl Alcohol Rubbing Compound is also listed in the group of antiseptics and germicides. Adequate standards for this widely used product are included in N. F. VIII. Official monographs on Nitromersol and two of its preparations will be included in N. F. VIII. This organic mercury antiseptic was originally introduced under the registered trademarked name Metaphen, a name which, of course, will be retained by the original manufacturer.

Table III includes a list of parasitocides and anti-infectives, sera, and expectorants admitted to N. F. VIII. Several of these represent deletions from U. S. P. XII, but some are entirely new as far as official standards are concerned.

In admitting several of the U. S. P. XII deletions, it was recognized that some of them such as sulfapyridine, for example, are rapidly being supplanted by more desirable types of medication. It was believed desirable, however, to continue official standards for at least one revision period.

In the class of expectorants it will be noted that Terpin Hydrate has been admitted to the National Formulary. This was done because it is an ingredient of two widely used National Formulary elixirs.

TABLE IV—New Admissions to N. F. VIII

OINTMENT INGREDIENTS

Cetyl Alcohol
Dioctyl Sodium Sulfosuccinate
Glyceryl Monostearate
Hydroxystearin Sulfate
Oleyl Alcohol
Rosin*
Sodium Alginate
Suet, Prepared*

SOLVENTS, REAGENTS, ETC.

Acetic Acid*
Acetone*
Alcohol, Dehydrated*
Lactic Acid*
Nitric Acid*
Phosphoric Acid*
Phosphoric Acid, Diluted*
Propylene Glycol
Sulfuric Acid*
Sulfuric Acid, Diluted*

(Continued, next page)

(Continued from preceding page)

MISCELLANEOUS DERMATOLOGICAL PREPARATIONS

Cerate*
 Methylrosaniline Chloride Jelly
 Tar Oil, Rectified*
 Rosin Cerate*
 Sulfurated Potash*
 Sun Cream, N. F.

ECBOLICS

Ergot*
 Ergot, Prepared
 Ergot Fluidextract

Table IV includes a number of ointment ingredients; solvents; miscellaneous dermatological preparations, and, in addition, Ergot, Prepared Ergot, and Ergot Fluidextract. No special comments or explanations concerning the admission of any of these drugs are necessary, with the possible exception of Ergot and its preparations which were admitted without assays.* It is expected that a chemical method of assay will be developed for these drugs and become official before April 1, 1947, which is the date when all the provisions of N. F. VIII will become effective.

Table V lists amino acids, diagnostic agents, and miscellaneous preparations admitted to the National Formulary for the first time. Discussion of these admissions individually now is beyond the scope of this report.

TABLE V—New Admissions to N. F. VIII

AMINO ACIDS, DIAGNOSTIC AGENTS AND
MISCELLANEOUS PREPARATIONS

Aminoacetic Acid*
 Aminoacetic Acid Elixir
 Camphor Spirit*
 Ceylon Cinnamon
 Gold and Sodium Thiosulfate
 Histidine Monohydrochloride
 Sodium Chloride and Dextrose Tablets
 Sodium Chloride Tablets
 Sodium Indigotindisulfonate
 Sodium Indigotindisulfonate Ampuls

CIRCULATORY DRUGS

Barium Chloride
 Barium Chloride Tablets
 Glyceryl Trinitrate Spirit*
 Strophanthin*
 Strophanthin Ampuls*

DIURETICS

Juniper Oil*

Table VI shows the anthelmintics, central depressants, analgesics and antipyretics, and sources of calcium which will be included in N. F. VIII. Calcium Levulinate has been used as a source of calcium and it is claimed to possess

advantages over some of the other calcium salts used for parenteral administration in that it can be used in higher concentrations and, because of its greater solubility, without the addition of stabilizing agents. Moreover, it is higher than Calcium Gluconate in calcium content. [For a detailed discussion of calcium compounds see page 443.—THE EDITOR]

TABLE VI—New Admissions to N. F. VIII

VERMIFUGES

Arecoline Hydrobromide Tablets
 Carbon Tetrachloride*
 Carbon Tetrachloride Capsules*
 Chenopodium Oil*
 Chenopodium Oil Capsules*
 Pelletierine Tannate*
 Santonin and Mild Mercurous Chloride Tablets
 Santonin Tablets

CENTRAL DEPRESSANTS

Brandy*
 Codeine*
 Pentobarbital Elixir
 Whisky*

ANALGESICS AND ANTIPYRETICS

Antipyrine*
 Colchicum Seed*
 Colchicum Seed Tincture*
 Phenyl Salicylate*

SOURCES OF CALCIUM

Calcium Gluconate Tablets
 Calcium Levulinate
 Calcium Levulinate Ampuls
 Calcium Phosphate, Tribasic*

Table VII includes hematopoietic drugs, local anesthetics, irritants, protectives, astringents and emollients. A number of familiar drugs and dosage forms are included in this table which heretofore have either been recognized by the United States Pharmacopoeia or have been unofficial. Among these are such old familiar drugs and preparations as Ferrous Carbonate Pills, Reduced Iron, Turpentine Oil and Bismuth Subnitrate. Although Bismuth Subcarbonate appears to be the drug of choice, since there is some possibility of nitrite poisoning arising from the use of Bismuth Subnitrate due to its reduction in the gastrointestinal tract, the latter appears to continue to be used to a much greater extent than the former.

TABLE VII—New Admissions to N. F. VIII

HEMATOPOIETIC DRUGS

Arsenious Acid Solution*
 Ferric Ammonium Citrate, Green*
 Ferric Cacodylate
 Ferric Cacodylate Ampuls
 Ferrous Carbonate Mass*
 Ferrous Carbonate Pills*

(Continued, next page)

(Continued from preceding page)

Ferrous Carbonate, Saccharated, Capsules
 Ferrous Gluconate
 Ferrous Sulfate Syrup
 Reduced Iron*
 Reduced Iron Capsules*

IRRITANTS, PROTECTIVES, ASTRINGENTS AND EMOLLIENTS

Allyl Isothiocyanate*
 Belladonna Plaster*
 Bismuth Subnitrate*
 Chalk Powder, Compound*
 Coconut Oil
 Linseed*
 Linseed Oil*
 Lycopodium*
 Nutgall
 Nutgall Ointment
 Titanium Dioxide
 Turpentine Oil*
 Turpentine Oil, Rectified*
 Zinc Acetate*
 Zinc Chloride*

LOCAL ANESTHETICS

Benzyl Alcohol
 Quinine and Urea Hydrochloride*
 Eucaine Hydrochloride*

It is apparent from the trends in types of official drugs illustrated in the figures and the lists of drugs newly admitted to N. F. VIII shown in the foregoing tables, that the problems involved in establishing official drug standards are becoming more and more difficult with each revision of the National Formulary. A greater emphasis than in the past is now necessary upon chemical and biological tests and assays than upon macroscopic and microscopic descriptions, ash and extractive determinations for botanical drugs.

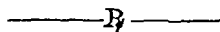
Some Style Changes in N. F. VIII

The most noticeable change in the style of N. F. VIII as compared with previous editions is the lesser prominence given to Latin titles and also the change in the arrangement of monographs. In the new edition the principal titles are in English and the Latin titles are placed in a secondary position previously occupied by English titles. It should be emphasized that this change does not mean the abandonment of a Latin system of nomenclature.

According to the plan which has been adopted, a drug such as Terpin Hydrate will be followed by Terpin Hydrate and Codeine Elixir and Terpin Hydrate Elixir. Under the Latin title arrangement Terpin Hydrate would have been among the "T's" and the Elixirs would have been among the "E's" with the titles, Elixir Terpini Hydratis et Codeinæ, and Elixir Terpini Hydratis. It is believed that the close proximity of basic drugs to their preparations presents an advantage in

that it will bring together the tests and assays applying to both which previously have been widely separated.

In N. F. VIII greater emphasis than heretofore will be placed upon the use of the metric system in stating average doses. In order to clarify the interpretation of approximate apothecaries' equivalents of doses stated in the metric system, an explanatory statement and a table of approximate dose equivalents are included. This table and the explanatory statement have been adopted by the Council on Pharmacy and Chemistry of the American Medical Association for use in New and Nonofficial Remedies, by the Revision Committee of the United States Pharmacopoeia and by the Committee on National Formulary.



TRANSLATION INTO SPANISH PLANNED FOR U. S. P. XIII

Translation of the forthcoming U. S. P. XIII has been authorized by the Board of Trustees of the Pharmacopœial Convention. The task will again be undertaken by Dr. A. A. Moll, assistant director of the Pan American Sanitary Bureau, who also supervised translation of both U. S. P. XI and XII.

The Spanish edition has been adopted as official in Costa Rica, Cuba, Dominican Republic, Nicaragua, Panama, Puerto Rico and the Philippines. It has been strongly recommended for adoption in several other countries, and was looked upon favorably by the Spanish pharmacopœial commission in Madrid. Demand for the Spanish edition has nearly doubled in the past few years, the U. S. P. office reports.

MINERAL OIL IN FOOD UNWISE

High prices and scarcity of edible vegetable oils have led to some use of mineral oil in food, particularly by restaurants. Occurrence of fecal incontinence due to ingestion of mineral oil where it has been substituted for edible oils has been reported.

The Council on Foods and Nutrition of the American Medical Association calls attention to the fact that "ingestion of liquid petrolatum is capable of interfering seriously with the absorption of carotene, vitamin D, calcium and phosphorus and vitamin K," and emphasizes that "its indiscriminate use in foods or in cooking is not in the interest of good nutrition . . ."

CALCIUM PREPARATIONS OF THE NF

FOURTH IN A SERIES ON DRUGS NEWLY ADMITTED TO THE NATIONAL FORMULARY

by MELVIN W. GREEN*

CALCIUM constitutes a larger proportion of the body weight than any other mineral element, but its importance is frequently underestimated because of recent stress on the vitamins and proteins. Perhaps another reason calcium may be overlooked is the fact that about 99% of the calcium is in the bones and many people believe that bone is a static substance. This view is in error, however, because the bones are serving as a calcium reservoir and constantly giving up calcium to the other tissues as well as laying down fresh calcium as bone from the softer tissues.

The small percentage of calcium that is not associated with bone plays an exceedingly important role in the physiology of the heart, the autonomic nervous system and the blood-clotting mechanism. Since many pathologic conditions may be traced to calcium deficiency, calcium preparations have a decided place in modern therapy.

To determine in precise terms the exact need for calcium is not easy. This information is obtained by calcium balance studies analogous to nitrogen balance studies. Since calcium is eliminated from both the kidneys and the intestines, any balance experiments not taking into account both sites of excretion are of very little help. The calcium found in the feces is not all calcium that has not been assimilated, for some calcium is actually excreted into the bowel. This is proved by measuring the increased calcium in the bowel contents after the intravenous administration of calcium. The most precise studies would seem to indicate that the average adult needs 0.45 Gm. of calcium daily. The needs of growing children and pregnant and lactating women are nearly double this quantity, which in more familiar household terms is about a quart of milk a day. In the case of infants, change from milk to other foods is more apt to bring about a deficiency in calcium than any other dietary deficiency. This is important to recognize because normal de-

PHYSIOLOGICAL NEEDS FOR MINERAL ARE MANY BESIDES BONE FORMATION, BASIC INFORMATION PRESENTED ON CALCIUM METABOLISM AND THERAPY

velopment involves not only an increase of the amount of calcium but an increased percentage of body calcium during growth as well. In addition to the requirements of growth, the calcium must function to change a soft skeleton to a hard, bony one.

The absorption and excretion of calcium is influenced by many factors. Because of the insolubility of calcium salts in an alkaline medium, acidity in the intestinal tract promotes calcium absorption. Thus the upper portion of the intestine, which is more acid, absorbs most of the calcium. The presence of a large excess of fatty acids in the bowel also delays absorption due to the formation of insoluble calcium soaps. Diarrhea will naturally decrease absorption by rushing the contents through the intestinal tract too rapidly for effective assimilation. Of even greater importance is a positive vitamin D balance.

The calcium not assimilated as bone is all found in the extracellular fluids since none penetrates the cells. Serum normally contains about 10 mg. per 100 cc. (about 5 milliequivalents per liter). The state of this calcium is quite different from simple inorganic solutions, for the serum contains about three times as much calcium as can be held in simple solution at the pH of blood and in the presence of similar concentrations of phosphate and bicarbonate ions. Since part of this calcium is dialyzable and part is not, some of the calcium must be present in an unionized form, apparently largely as a proteinate. In addition some of the calcium is probably present as unionized soluble complexes.

Locally the calcium ion has very little action although some calcium salts, largely by virtue of the anion, are irritating. For example calcium



* Chief chemist, AMERICAN PHARMACEUTICAL ASSOCIATION Laboratory.

chloride injected into the subcutaneous tissues can cause considerable sloughing. Calcium levulinate or calcium gluconate has the advantage in intravenous medication because of the lack of such an irritating quality.

While an excess of calcium has little effect on the nervous system, a deficiency causes a marked disturbance resulting in a low-calcium tetany. This is characterized by a spasm of the throat muscles, toes and wrists, and by convulsions. Smooth muscles of the bronchi, eye, gastrointestinal tract and bladder may be thrown into spasm also and even the cardiac muscle may be sufficiently affected to cause arrhythmia.

When calcium is injected intravenously, as it reaches toxic levels a gradual slowing of the heart occurs until at a blood level of 60 mg. per 100 cc. death occurs (dogs) from stoppage of the heart. The cardiac effect of calcium in some ways resembles digitalis, and in fact an increase in the toxicity of digitalis has been reported when the calcium level is too high.

Calcium salts have been given for edema and inflammation where they are said to decrease capillary permeability. The results are so erratic that it is questionable whether it is worth the trouble of calcium medication, however.

While the calcium ion is an essential link in the conversion of prothrombin to thrombin in the clotting of blood, it is very doubtful whether a calcium deficiency is ever responsible for a prolonged bleeding time.

In 1939, Danforth and Ivy showed that the uterus, like the heart, is very sensitive to calcium ions. When the calcium ion concentration in the blood was low, the uterus failed to respond to oxytocic drugs and, conversely, the oxytocic action of drugs could be potentiated by calcium. These workers point out that the administration of alkalinizing agents to reduce the calcium ion concentration may be effective in diminishing hyperirritability of the uterus in cases of threatened abortion and in relieving cases of uterine spasm.

advantageous in veterinary practice where frequently large amounts of calcium must be given. Cox, Dodds and Casper found it possible to dissolve 34 Gm. of calcium levulinate in enough water to make 100 Gm. of finished solution corresponding to approximately 50% by weight-volume.

Stability

Calcium gluconate for injection must be stabilized to maintain a clear solution. Calcium levulinate possesses the advantage of not requiring a stabilizer. In fact, calcium levulinate is often used as the stabilizer in calcium gluconate ampuls.

The table shown below gives the approximate percentage of calcium in the official compounds of calcium, the approximate solubility in water at room temperature, and the average dose.

OFFICIAL COMPOUNDS OF CALCIUM

COMPOUND	APPROXIMATE PER CENT CALCIUM	APPROXIMATE SOLUBILITY IN Water	DOSE, GM.
Carbonate	40	Insol.	1.0
Chloride	27	1 in 1.2 cc.	1.0*
Gluconate	9	1 in 30 cc.	5.0
Glycerophosphate	19	1 in 50 cc.	0.3
Hydroxide	54	1 in 630 cc.	0.02*
Hypophosphite	23	1 in 6.5 cc.	0.5
Lactate	13	1 in 20 cc.	1.0
Levulinate	13	1 in 2	1.0*
Phosphate, di-basic	23	Insoluble	1.0
Phosphate, tri-basic	13	Insoluble	1.0

* Dose based on official preparation.

New Admissions

Three calcium preparations have been newly admitted to the National Formulary in the eighth edition: calcium levulinate, calcium levulinate ampuls, and calcium gluconate tablets.

Calcium levulinate is a nonirritating salt of calcium which is very soluble in water so that, although the salt contains a moderate percentage of calcium, the calcium content of injectable solutions may be made quite high. This is especially

Previous papers in this series on products newly admitted to the National Formulary have appeared as follows: Antiseptic Mercury Compounds, March, 1946, p. 132; Acetarsones, Carbarsone and Iodochlorohydroxyquinoline, April, 1946, p. 150; Some Pharmaceutical Necessities, July, 1946, p. 297. See, also, Iron Salts, February, 1946, p. 56; Sun Tan Ointment, July, 1945, p. 181.

BAL

BAL, a new product for use in the treatment of arsenic and mercury poisoning has become available for civilian medical use.* Discovery of the anti-arsenical properties of BAL was hailed as one of the outstanding wartime achievements in the field of chemical warfare. The first report on this important drug came from Prof. R. A. Peters of Oxford University and his co-workers, who discovered the therapeutic value of BAL. As the name BAL (British anti-lewisite) suggests, the drug was intended as an antidote for local and systemic toxic effects of certain arsenical war gases. Chemically, it is 2,3-dimercaptopropanol.

Early work showed that experimental animals usually died within twenty-four hours following application of lethal amounts of lewisite to the skin, but that they almost invariably recovered when BAL was applied to the treated area within two hours. Information on the chemistry, method of preparation and basic biochemical characteristics of BAL was transmitted to the United States early in the war through the British government, and a supply of BAL itself was received in this country late in 1941.

An intensive study of the drug and its properties was at once undertaken by various government agencies. The United States Army and Navy, the Office of Scientific Research and Development, the National Research Council and the Federal Security Agency all cooperated in the program. At the same time further studies were being made in Great Britain and in Canada. Many related compounds were prepared and tested, but of the whole series BAL gave the most favorable results.

Because of its great importance to the armed forces BAL and the preparations made from it were produced under "secret" classification. All data relating to the drug, its uses and method of preparation were guarded with the greatest care. This information is now becoming available, and only in the past few months have ampuls been released for civilian medical use.

The development of BAL began with the observation that the drug, applied as a solution or ointment, counteracted local and to a considerable extent systemic effects of applications of toxic arsenical compounds to the skin. These experi-

**NEW ANTIDOTAL TREATMENT FOR
ARSENIC POISONING-NOW READILY
AVAILABLE, EVIDENCE INDICATES
USE OF DRUG MAY HELP REDUCE
TOXIC EFFECT OF OTHER METALS**

ments led directly to further studies in animals of the toxicity and therapeutic effects of BAL in various vehicles and by various methods of administration. A detailed investigation of dosage was also undertaken, at first on animals and later on human volunteers.

From the information assembled in this way formulas were developed for topical application as well as for a solution to be injected intramuscularly. BAL is not an innocuous drug, but fortunately dilutions that are therapeutically effective may be used with no lasting ill effects. During the war, preparations were made for topical application to the eyes and skin to overcome local reactions in case poisonous arsenical gases were used. But of chief interest to civilians is the solution used by injection in cases of systemic poisoning.

The most effective solution for injection, developed by Dr. Harry Eagle of the U. S. Public Health Service and his collaborators, proved to be a 10% solution of BAL in peanut oil containing 20 % benzyl benzoate. This solution was first tested on animals, then on human subjects, and was finally given a clinical trial.

Since toxic reactions are occasionally observed in patients receiving arsenotherapy for syphilis, a carefully supervised study of these cases was made. As a result more than 200 case histories of various types of arsenical poisoning treated with BAL were assembled. Most of the toxic reactions treated consisted of arsenical dermatitis or hemorrhagic encephalitis occurring as a result of treatments for syphilis. Only seriously ill patients were treated with BAL at first and they, of course, received the usual supportive treatment. In spite of the difficulties of making an exact estimate of the value of a drug under such conditions, the data obtained supported the results secured on animals.

After the therapeutic value of BAL became es-

* Supplied by Hynson, Westcott & Dunning, Inc., Charles and Chase Sts., Baltimore 1, Md.

tablished, the Hynson, Westcott & Dunning laboratory was requested to cooperate in developing the ampul product. Because of urgent need for the drug, manufacturing was undertaken while the new plant was being organized.

Meanwhile, work on animals indicates that BAL also may be of use in treating poisoning by other metals such as cadmium, zinc and mercury. Although its value in poisoning due to metals other than arsenic is not yet definite, a recent report by the Council on Pharmacy and Chemistry of the American Medical Association stated that BAL had been used with promising results in mercury poisoning [*J. Am. Med. Assoc.*, 131: 824, 1946]. It should be emphasized, however, that successful treatment of arsenic and mercury poisoning depends on beginning the course of injections at the earliest possible moment, use of adequate dosage, and the proper supportive measures. The possible value of BAL in gold poisoning is also under investigation.

As to the mechanism of action of BAL, wartime studies showed that arsenic and mercury combine with certain chemical groupings in the body cells (specifically the -SH groups) and prevent their proper functioning. BAL has a greater chemical affinity than the cells for the heavy metals and apparently removes the metal from the cell by forming a metal-BAL compound. The

effect of this is that arsenic, for example, is removed from the cells, forms a stable combination with BAL and is rapidly eliminated from the body. It has been shown that the arsenic content of the urine in these cases rises rapidly after administration of BAL.

BAL is unstable in aqueous solution and must be administered intramuscularly in oil solution. Benzyl benzoate is added because the drug is more soluble in the mixture than in peanut oil alone.

The recommended dose per injection is adjusted to body weight on the basis of 2.5 mg. per Kg., or 0.025 cc. of the solution per Kg. In a man weighing 165 pounds the unit dose per injection is 1.8 cc. This dose is repeated at four-hour intervals for a total of 4 to 6 injections on each of the first two days. The dosage may then be reduced to 2 injections daily for a total of ten days or until the patient recovers completely.

Larger doses of BAL seem necessary in cases of mercury poisoning. An initial dose of 5 mg. per Kg. is followed in one or two hours by a dose of 2.5 mg. per Kg. The smaller dose is repeated two to four hours later and in severe cases a third 2.5 mg. per Kg. dose is given within the first twelve hours of therapy. Two 2.5 mg. per Kg. doses may be given on the second day and one on the third.

PHYSOSTIGMINE FOR RHEUMATOID ARTHRITIS

PHYSTIGMINE salicylate has been put to a new use by three physicians who find that it is effective in relieving muscle spasms and some of the pain in rheumatoid arthritis.

Drs. Abraham Cohen, Philip Trommer and Joel Goldman (*J. Am. Med. Assoc.*, 130:265, 1946) reject their previous recommendation of neostigmine, a drug successfully used in treating muscle spasm in poliomyelitis. Physostigmine was selected for study because it is closely related in action to the former drug.

The authors conducted their study in the special arthritis wards of the Philadelphia General Hospital. From their observations they conclude that physostigmine is successful in giving immediate relief from muscle spasms and for preventing deformities and, moreover, it is an inexpensive form of treatment.

In addition the authors found that there were fewer undesirable reactions with physostigmine than with neostigmine. They say: "The lesser frequency of complaints with physostigmine made

for better patient cooperation. . . . It is because of this and for reasons aforementioned that we have substituted physostigmine for neostigmine in all our studies. As will be noted, physostigmine bears out our original premise in respect to clinical improvement. It relieves muscle spasm and therefore relieves pain in many instances. The relief is common to a large portion of cases and is frequently encountered within fifteen to thirty minutes after injection."

The usual procedure was to give 0.6 mg. each of physostigmine and atropine sulfate simultaneously. If no relaxation of muscle was obtainable with this dose, physostigmine was increased to 1.2 mg. The atropine eliminates unpleasant parasympathetic side effects of physostigmine. The dosage of either atropine or physostigmine was carefully adjusted depending on the reaction.

William Levin, chief pharmacist at Philadelphia General Hospital, is credited by the physicians with assistance in the early part of the experiments.

A decorative border composed of numerous small American flags arranged in a continuous line around the perimeter of the page.

MEMORIAL HONORS PHARMACISTS WHO SERVED FLAG

See Front Cover

ARCHITECTURAL designs are now completed for the flagstaff at the AMERICAN PHARMACEUTICAL ASSOCIATION building which will be dedicated to pharmacists who have served the flag. An artist's conception of this national memorial is shown on the front cover.

In a beautifully landscaped setting, the flagstaff rises to a commanding height at the left of the entrance to A. PH. A. headquarters. Symbolic of pharmacists' service in time of war, and their continuing contribution to peacetime living, the sturdy bronze staff will hold aloft the American flag. Around the rugged marble and granite base will be a marble bench bearing an appropriate inscription.

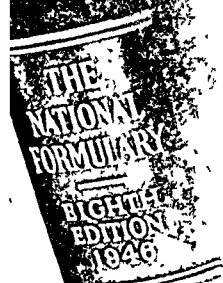
This fitting memorial has been made possible by a gift to the ASSOCIATION from one of its life members, and a veteran of the Spanish-American war, Dr. H. A. B. Dunning of Baltimore. Dr. Dunning is a past president of the AMERICAN PHARMACEUTICAL ASSOCIATION, currently a member of the Council, and has long been active in A. PH. A. affairs. His vision and great interest in the ASSOCIATION's program have been largely responsible for such projects as construction of the headquarters building in Washington, D. C., and establishment of the *Practical Pharmacy Edition* of THIS JOURNAL. He is widely known for his works as a pharmaceutical scientist, philanthropist and patron of scientific research and development.

Plans for the memorial were first announced at the 1946 meeting of the ASSOCIATION in Pittsburgh. In his convention address President George A. Moulton referred to Dr. Dunning's contribution as another demonstration of "his keen interest in the future of American pharmacy and his abiding faith in the AMERICAN PHARMACEUTICAL ASSOCIATION as the instrumentality for effective leadership."

The memorial flagstaff will not only honor the some 15,000 pharmacists who served in World War II, but also those who fought to gain and preserve the nation's liberties down through the decades.

Since the time of Apothecary-General Hugh Mercer, who died on a Revolutionary battlefield, the profession has played an important role in the medical department of the Army and the fighting forces: in the War of 1812, the War Between the States, the Spanish-American War, and World Wars I and II. In bronze and stone, and in the red, white and blue, these pharmacists will be permanently remembered in the nation's capital.

N. F. VIII



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THE PHARMACEUTICAL SURVEY: ANSWERS VERSUS THE QUESTIONS*

by EDWARD C. ELLIOTT

AMERICAN COUNCIL ON EDUCATION, DIRECTOR OF THE PHARMACEUTICAL SURVEY

MY present assignment has to do with "The Pharmaceutical Survey." When this enterprise first became known to me, it had various names: A Survey of Pharmaceutical Education in the United States; A Survey of Pharmacy; A Study of Pharmacy and Pharmaceutical Practices in the United States; A Survey of Pharmaceutical Education, Practices, and Services. An examination of the indicated purposes of the Survey finally led to the adoption of the title, "The Pharmaceutical Survey." This, at least, had the advantage of brevity for talk, telephone and typewriter. The requisition for my appearance on this program, presented by your energetic and energizing Secretary, demands an effort to translate the title into the terms of the planned program of action.

The opportunity to discuss the goals and the methods of the Survey before the members of this key ASSOCIATION of the profession of pharmacy is a bit of good fortune for me, and perchance, for you also. The stake in the outcomes of this constructive study of pharmacy is not small. Consequently, you are entitled to share in the intentions, the methods, and the expectations of the Survey.

My own professional activities as a university president for more than thirty years have included the administrative oversight of, and general responsibility for, a school of pharmacy. When I assumed my present post, I was, therefore, not wholly unfamiliar with the continuing problems of the professional training and education centering in such schools. At the same time, I was fully aware that I was undertaking the new task with not a few of the disadvantages of ignorance. Here I was, an individual with a certain background of scientific and educational experience, commissioned to place pharmaceutical education under the microscope; and in the light of 1946, to describe, with accuracy and disinterest, what he was able to see. With the assistance of a committee, representing the leadership of the various practical activities belonging to the domain of pharmacy, an attempt would be made to interpret the assembled facts as related

to, and as determining the functioning of, the colleges and schools of pharmacy.

As one studies the development of American pharmacy, particularly during the past half century, he cannot fail to be impressed by the never-ending activity and display of power of the profession for the more complete realization of its high ideals. The far-reaching accomplishments make a dramatic chapter in the record of the development of American life. To no small degree, the American standard of living is to the credit of pharmacy; pharmacy acting through its individual leaders, and through its local, state, and national organizations. Would that each American were disposed to see in the familiar corner drugstore of today, not merely an emporium for his material convenience, but an all-important agency created through the labors of idealistic, practical, unselfish servants in the house of civilization for the preservation and welfare of that house. And to know, furthermore, that the going through the years has been tough going.

The Pharmaceutical Survey, therefore, is not something entirely new. It is but another step in the forward movement of the profession in its crusade for the protection and the promotion of American well-being. Not a small share of the credit for the taking of this step belongs to the leadership of the organized professional schools and colleges for the training of pharmacists, and especially to the American Foundation for Pharmaceutical Education for making available the necessary funds.

Of Science, Business and Life

From the limited vantage point of the present moment, the broad, inclusive purpose of the Survey is to assemble, as far as may be possible with the means and resources available, those facts of education, of science, of business, and of life that must be taken into account by those preparing men and women for the skillful and effective performance of the duties belonging to the profession of pharmacy.

Before it is completed, it is expected that the Survey will be able to point out the ways and

* Presented at the 1946 meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, Pittsburgh, Pa.

means for the constructive utilization of these facts. In other words, there should result a prescription for the better health of pharmacy as this is determined by its trained practitioners. The effective, widespread implementation of the facts developed may be a test of the inward strength and the outward vision of the profession of pharmacy.

Some Purposes

One of the early sketches for the then proposed Survey contained the following listing of purposes.

1. To determine what pharmacists do in practice.
2. To determine what the pharmacist should know in order to perform his specified duties.
3. To determine what the colleges should teach in order to fit pharmacists for the work they are expected to do.
4. To determine what the pharmacist is expected to do, what he must know, and what the colleges must teach in reference to the several types of positions in industry, government service, Army, Navy, etc.
5. To determine trends which may indicate what pharmacists will do in the future.
6. To determine the economic status of pharmacists.

While this list was expanded for the making of the first ground plan of the Survey, it centers attention upon the main intention of the Survey: to be sure that pharmaceutical education was not being conducted in an academic vacuum and did not disregard the hard realities of the world of which it was a part.

The document which is to be considered as the charter of The Pharmaceutical Survey, and which is the result of the joint activity of the American Association of Colleges of Pharmacy, the American Foundation for Pharmaceutical Education, and the American Council on Education, contains the following general statements of purpose and list of specific undertakings:

"Because of the important role that pharmacy plays in American life, because pharmaceutical services are constantly being expanded, and because pharmaceutical education has expanded until there are at present approximately 65 schools of pharmacy in the country, it is important that a study be made of pharmacy and pharmaceutical services to include some or all of the following areas:

- "1. An analysis of prescriptions to deter-

mine the knowledge required in compounding them.

"2. A study of the activities engaged in by pharmacists.

"3. An analysis of the general knowledge that a pharmacist should have regarding pharmaceutical products as indicated by information requested by members of the medical profession and questions asked by customers.

"4. A study of new fields of pharmaceutical service with their implications both for training and for employment.

"5. A study of the role of pharmacy in medical care.

"6. An evaluation by pharmacy graduates of their previous training in relation to activities in which they engage.

"7. A study of supply and demand of trained personnel in the field of pharmacy.

"8. The relationship of pharmaceutical education to business and industry—how the education can be more closely integrated with practical experience.



PHARMACEUTICAL SURVEY DIRECTOR, Edward C. Elliott, of the American Council on Education, addresses A. Ph. A. members at Pittsburgh Convention on the nation-wide study of the profession just inaugurated.

"9. Provisions for the guidance of pharmaceutical students within the pharmaceutical colleges.

"10. The establishment of criteria for the selection of pharmacy students.

"11. The qualifications of faculty members and the conditions of faculty service in the pharmaceutical colleges.

"12. The levels of educational preparation required in pharmaceutical services.

"13. The relationship of requirements for licenses to programs in pharmaceutical education."

Fact Finding Under Way

The Survey is now in the first stage of its fact-finding operations. The most that can be said now is an inadequate account of the first of these operations. With the approval of the National Committee first attention is being given to an examination of quality of the student material in the accredited colleges and schools of pharmacy—the raw human stuff for the substance of the profession in the years ahead. This involves the application of a series of student prediction and achievement tests.

Next in line for consideration is the analysis of present-day prescriptions to determine the technical knowledge required for their compounding and filling. It has been urged by those who claim to know that this analysis should include not less than 50,000 prescriptions, selected in such a way as to be truly representative of the nation's prescription practices. In any event, the Survey will utilize the best of modern sampling techniques, beginning with a first thousand prescriptions and increasing the number until the statistical distributions tend to be stabilized. We shall try, in this bulky job, to make the head save the heels and the hands.

A base plan has been prepared for the study of the actual daily activities of the pharmacist on the job. These facts of this job and time analysis may be considered as having a critical significance for the creation of an effective working relation between training and the tasks of the job. Perhaps this study will provide data for understanding the nature of the gap between the technical artistry of compounding prescriptions and the troublesome art of pounding the cash register for profits. Here one may surmise, but not promise.

In passing, it may be noted that I intend personally to visit and to study at first hand as

many of the colleges and schools of pharmacy as time and money permit. Representative pharmaceutical manufacturing establishments and research laboratories, as well as hospitals, will be included within the range of observation. The Survey is to be a ground operation; and not an affair of attic speculation.

One thing is already crystal-clear: The ultimate success of the enterprise will depend upon the extent and degree to which it will be enabled to enlist the complete cooperation of all of those groups that have a vested interest in pharmacy—trainers, manufacturers, wholesalers, retailers, detailers, and finally the consumers.

Not a small part of my own self-training for the present tasks has consisted of the reading of hundreds and hundreds of pages of addresses, reports, and editorials relating to the status and problems of pharmacy. The first impression was that pharmacy was suffering from the malady of professional frustration; that the profession, in our American world, had become so entangled in the meshes of commerce that it had begun to feel that it had lost much of its time-honored standing. How often during this long examination of the printed records have I come across the phrase, "Pharmacy is an ancient profession." Fortunately this has not unduly impressed me.

With Energy and Optimism

The Pharmaceutical Survey is going about its indicated purpose with energy and optimism, and with a firm conviction that pharmacy must not rely upon its well-preserved antiquity to maintain itself in the world. We are dealing with the needs and opportunities of the new profession of pharmacy.

It is encouraging to read in a recent report of the American Council on Pharmaceutical Education the wise observation of its wise secretary, Dean DuMez:

"All of us realize that the practice of pharmacy has changed within the past several decades and that there is little or no probability of its returning to its former pattern It is time the colleges of pharmacy ceased to bemoan the fact that the modern pharmacist no longer performs certain professional services . . . , to accept with good grace the change which has taken place and to make provision in the pharmaceutical curriculum to meet it."

The Survey has begun its work with confidence that the key facts indicated in the base blueprint will be obtained. On the other hand, the significance of these facts is the real problem. As the

great scientific thinker of the last century once said, "Those who refuse to go beyond fact rarely get as far as fact."

For the processing of the accumulated facts the Survey will rely upon the combined wisdom and vision of the Committee designated for the general oversight of the enterprise. The AMERICAN PHARMACEUTICAL ASSOCIATION will, it is certain, have confidence in such men as: George D. Beal, assistant director, Mellon Institute; W. Paul Briggs, Veterans Administration; W. W. Charters, director, The Research Service, Stephens College; B. V. Christensen, dean, College of Pharmacy, Ohio State University; Donald A. Clarke, apothecary-in-chief, The Society of the New York Hospital; George V. Doerr, first vice-president, McKesson and Robbins, Inc.; A. G. DuMéz, dean, School of Pharmacy, University of Maryland; Carson P. Frailey, executive vice-president, American Drug Manufacturers Association; H. Evert Kendig, dean, School of Pharmacy, Temple University; Frank W. Moudry, secretary, Minnesota State Board of Pharmacy; Edward S. Rogers, chairman of the Board, Sterling Drug, Inc.; Robert L. Swain, editor, *Drug Topics*; Frank O. Taylor, Parke, Davis & Co.; John A. Stevenson, president, The Penn Mutual Life Insurance Co.; Charles R. Walgreen, Jr., president, Walgreen Drug Co.

It may be safely forecast that the distinctive function of the Survey is that of stimulating the development of a broad educational philosophy for pharmacy; a philosophy which, in action, will grip the spirit of those who aspire for a career of high human service.

Finding the Question

In one of the few of his poems that I am able to understand, Archibald MacLeish has expressed a thought which is constantly in my mind these early days of the Survey:

We have learned the answers, all the answers
It is the *question* we do not know
We are not wise. We have a way of saying
What's the meaning of life? No one has
answered us.

Will you permit a few examples of what I mean by the questions that have not yet been put? These are referred to as proof that the Survey maintains an open mind. We know we may not intentionally neglect any of the forces tending to distort or to diminish the plan and power of the profession.

1. *Is the future status of the profession of pharmacy to be determined by the educational institutions or by forces outside of these institutions?*

2. *Is pharmacy a true profession? Or is it to be placed in another classification of human activities? One of my advisers has put the problem in a different form when he asks, "Is it possible for a true profession to be practiced over a counter?"*

3. *Is the practice of pharmacy helped or handicapped in the modern environment of high-pressure advertisement and distribution?*

4. *Is the prevailing code of the ethics of pharmacy fitted for the realities of the world in which it is to be applied?*

5. *Has the time arrived when the profession of pharmacy and of medicine should reexamine and re-state their relations and mutual responsibilities?*

6. *Is the profession of pharmacy receiving its rightful share of the limited supply of youth of superior ability and ambition?*

7. *What is to be the probable effect of the growing movement for the so-called unionization of pharmacists? Will this contribute to the competency, the dignity and public standing of the new generation of the ancient profession?*

"The Squared Circle"

On my desk in Washington there is a large sheet headed "The Squared Circle." Below this heading there is a four-cornered figure. If we were looking at this together, we would see a word written at each corner. These four words are Politics, Profits, Profession, and Public. In the center of the square is the word Pharmacy. This design symbolizes the fourfold complexity of the problem of the Survey. Pharmacy is under the necessity of maintaining high scientific and personal standards for its practitioners. Pharmacy operates within the framework of legal controls imposed by state and national governments. Under our system of free enterprise the element of material profits may not be glossed over. Finally, as a recognized member of the group of health professions, people and their welfare must always be the center of concern.

Recognizing fully the difficulties of the problem The Pharmaceutical Survey has committed itself to the cause of the profession of pharmacy—the profession at once free and consecrated to the service of the health and well-being of men and the children of men.

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GENTIAN VIOLET JELLY

I notice that methylosaniline chloride jelly will be official. Will you please send me the formula?

Also, do you know through which concern I could purchase an electrical high-speed stirrer suitable for prescription compounding of suspensions and emulsions.—D. S., New Jersey

Methylosaniline chloride jelly, a new admission to the *National Formulary*, has the following formula:

Methylosaniline chloride....	10	Gm.
Glycerin.....	150	Gm.
Exsiccated sodium phosphate	4.3	Gm.
Tragacanth.....	15	Gm.
Eugenol.....	0.3	cc.
Eucalyptol.....	0.3	cc.
Methyl parahydroxybenzoate.....	0.26	Gm.
Propyl parahydroxybenzoate	0.14	Gm.
Distilled water, a sufficient quantity,		
To make.....	1000	Gm.

Dissolve the methylosaniline chloride, exsiccated sodium phosphate, methyl parahydroxybenzoate and propyl parahydroxybenzoate in about 700 cc. of distilled water. Add the glycerin, tragacanth, eugenol, eucalyptol and sufficient distilled water to make 1000 Gm. Mix well, and keep in a closed container for one week with occasional mixing or agitation and then strain through light muslin.

Storage—preserve methylosaniline chloride jelly in tight containers, preferably in collapsible dispensing tubes.

A motor-driven stirrer suitable for use in prescription work may be purchased from such firms as the American Instrument Company, 8010 Georgia Avenue, Silver Spring, Md.; and the Colloid Equipment Company, 50 Church Street, New York, N. Y. In writing suppliers be certain to mention the types of work you will expect the stirrer to do, and especially the average volume to be handled at a time.

STABILITY OF CITRATE SOLUTION

We have difficulty in getting a stable solution of magnesium citrate. The U. S. P. formula has been adjusted to use proportionate amounts of magnesium carbonate according to the MgO content. We follow the U. S. P. method but a slight sediment appears after a month or so. How can we remedy this situation?—J. M., Mass.

Difficulty has been experienced with the stability of solution of magnesium citrate due to a number of factors. You are apparently avoiding one common source of trouble by adjusting the magnesium carbonate content on the basis of an assay of the carbonate. This is an important point, for one can prepare a solution so as to maintain a high acid value necessary for stabilization. According to data submitted, the amount of

carbonate used comes as close to the minimum as can be safely employed.

It would be well to check the quality of your distilled water. A number of firms have had difficulty when the still was not functioning properly or where they were not securing official distilled water.

Does your solution assay properly both for magnesium oxide and for minimum total citric acid? It would also be well to check your purified talc for soluble substances. Apparently there has been some difficulty in obtaining talc in recent times which is comparable to that previously obtained.

PROPYL THIOURACIL

We are receiving inquiries for a preparation called "propyl thiouracil" from a local physician. Please advise us if you have any information on this product.—J. W., New Brunswick

We understand that propyl thiouracil is currently available only for experimental use. It is hoped that this form of thiouracil will have a considerably lower toxicity, particularly in regard to the incidence of granulocytopenia, than thiouracil itself.

Complete information concerning the thiouracil now on the market will be found in the December, 1945, and February, 1946, issues of THIS JOURNAL.

ASPIRIN SOLUTION UNDESIRABLE

Please advise me the best way to fill the following prescription:

Sodium phenobarbital.....	gr viii
Ac. acetylsalicylic	
Sodium salicylate, aa.....	℥ ii
Elix. lact. pepsin, q.s.ad.....	℥ vi

—C. W., North Carolina

The main difficulty is due to acidity of the aspirin and lactic acid in the vehicle. This combines to precipitate phenobarbital and salicylic acid, and there is not sufficient alcohol in the vehicle to hold these drugs in solution. Furthermore, the prescribing of aspirin in solution is generally to be discouraged because aspirin is not stable under such conditions and rather rapidly breaks down into salicylic acid and acetic acid.

If the physician insists on prescribing these drugs together, we would suggest that you use the corresponding amount of phenobarbital, in

place of sodium phenobarbital, and get the physician's permission to use isoalcoholic elixir N. F. as a vehicle. In using the isoalcoholic elixir, about two-thirds of the total amount of solvent should be the high alcohol elixir and the remainder the low alcoholic elixir.

This will give a total alcohol content between 30% and 40% and will be sufficient to keep everything in solution. Bear in mind, however, that this does not prevent hydrolysis of the aspirin.

EMULSIFICATION NECESSARY

We are having trouble compounding the following prescription:

Novocaine solution, 1%.....	℥ ss
Chloretone inhalant, q. s.....	℥ i
M. sol.	

Sig.—Use as nose spray, t.i.d.

Kindly advise your method of dispensing.—S. K., Maryland

We assume that the "trouble" in compounding novocaine solution with chloretone inhalant refers to the fact that oil and water do not mix.

If your physician insists on adding novocaine solution to the chloretone inhalant, which contains liquid petrolatum as the solvent, the only suggestion that we have is one of emulsification. The best emulsifying agent and procedure would be to use Pharmagel A with the necessary amount of tartaric acid, making the emulsion with the use of a hand homogenizer, as indicated on page 30 of the First Bound Supplement to the U. S. P. XII. In the absence of a hand homogenizer, some emulsifying agent other than gelatin would have to be used.

Gelatin would be highly superior because of the quality of the finished emulsion and the fact that the emulsion would not be thickened materially as it usually is when other emulsifying agents are used.

CALCIUM GLUCONATE INJECTION

Please be good enough to give any available information on the preparation of calcium gluconate for intravenous use in ampul medication.—B. W., New York

Instructions under Calcium Gluconate Injection on page 225 of U. S. P. XII should be fairly adequate for your purpose. Ampuls of calcium gluconate solution are rather unstable, and

manufacturers usually employ a stabilizer such as calcium glycerosaccharate or calcium dextro-calcium d-saccharate. Tests and standards for the latter will be found on page 471 of *New and Nonofficial Remedies 1945*, published by the American Medical Association. You should also find helpful Dr. Louis Gershenfeld's book, *Bacteriology and Allied Subjects*, Mack Publishing Company, Easton, Pa., (1945), \$6.

LABELING OINTMENT FOR DOGS

Is it required to note active ingredients on a label for an external ointment for dogs?—M. B., New York

We assume that the ointment has been compounded in your pharmacy from ingredients which have been in interstate commerce. If the finished product is not placed in interstate commerce, however, we believe that the labeling requirements of the Federal Food, Drug and Cosmetic Act do not apply. To our knowledge, the Food and Drug Administration has not inaugurated a misbranding action against a product that has not been in interstate commerce after compounding. No doubt you have already checked the labeling requirements of your state laws. Any provisions therein concerning the listing of ingredients, adequate directions, etc., would of course be applicable.

METHYL PARA-HYDROXYBENZOATE

Where can we obtain methyl para-hydroxybenzoate?—S. M. V., Massachusetts

This N. F. preservative should be available through your wholesaler. However, it may be obtained from the Heyden Chemical Corp., 50 Union Sq., New York 3; also the Chemo Puro Mfg. Corp., Goldschmidt Chemical Corp., and R. W. Greeff and Co. .

PREPARING LIVER EXTRACTS

For the use of this institution, I would appreciate it very much if you would send me information on the preparation of liver extracts for parenteral use.—A. C., Costa Rica

Such products had best be purchased from companies (such as Armour Laboratories, Chicago 9, Ill.) which manufacture these products and guarantee them. They can be purchased

in bulk and then filled into suitable vials, ampuls or other containers. The bulk preparations are sterile and usually preserved with 0.5% phenol. They are refilled under aseptic conditions after Berkefeld filtration. If heat sterilization is employed for the final container, it is advisable not to exceed a temperature of 65° C. for one hour on two or three successive days.

To prepare the extract itself requires extensive processing and a suitable set-up. For instance, if the liver extract is to be similar to the U. S. P. products, livers from edible animals are employed, extracts with suitable solvents are prepared, then concentrated *in vacuo*, followed by fractional precipitation with alcohol at low temperatures and at all points proper pH adjustments are made. The nitrogenous non-protein fraction G of Cohn, *et al.* (*J. Biol. Chem.*, 74:69, 1927) is employed. If the liver extract is one not necessarily to be used for cases of pernicious anemia, other fractions are used. *New and Nonofficial Remedies 1940* and other editions prior to this edition briefly give methods of preparation.

RICE FLOUR UNSATISFACTORY

We haven't been able to produce a smooth, grit-free ointment with the two following prescriptions and would appreciate your advice:

R _x I. Pine tar ointment.....	6
Zinc oxide.....	12
Lead Oint. (Phar. Recipe Book).....	12
Rice flour.....	12
Aquaphor, q. s. ad.....	180
R _x II. Ichthyol.....	9.6
Zinc oxide.....	53.6
Rice flour.....	53.6
Neutractor.....	4.8
Aquaphor, q. s. ad.....	480

—E. IV., Indiana

The difficulty experienced with the two prescription formulas is undoubtedly due to an unsatisfactory grade of rice flour. We have been unable to secure an impalpable grade.

The finest powder obtained, when tested through a 100-mesh screen, leaves a residue of 15%. This is not sufficiently fine for ointment use. No doubt the physician will permit the use of rice starch in lieu of rice flour.

In prescription II it is obvious that substituting rice starch for rice flour is apt to give a very stiff ointment. Perhaps the physician would agree to reducing the quantity of this ingredient.

The Hospital Pharmacist

1946 MEETING OF A. S. H. P.

THE American Society of Hospital Pharmacists held its first national meeting since September, 1944, when more than 90 hospital pharmacists convened at Pittsburgh in conjunction with the 1946 convention of the AMERICAN PHARMACEUTICAL ASSOCIATION. Reports of the officers indicated the rapid growth of the organization since 1943 when a group of 150 hospital pharmacists organized as an affiliate of the AMERICAN PHARMACEUTICAL ASSOCIATION. At the present time the Society has more than 800 members.

Projects for the past year included initiation of the first Institute on Hospital Pharmacy held in Ann Arbor, Mich., in July, maintenance of the publication of *The Bulletin*, continuation of work on minimum standards for hospital pharmacies, increased local organization of affiliated groups, and coordination of a series of hospital pharmacy articles written for hospital administrators and published in *Hospitals*, the official journal of the American Hospital Association.

Highlighting the convention was Dr. Edward C. Elliott of the American Council on Education and director of the recently inaugurated Pharmaceutical Survey, who talked with the hospital pharmacists concerning their part in the survey program. Thomas A. Foster and R. D. Kinsey of the U. S. Public Health Service held an informative discussion on "Hospital Pharmacy in the U. S. Public Health Service." Other papers of interest to the group were presented by hospital pharmacists. Joint sessions were also held with the Section on Practical Pharmacy and the American College of Apothecaries, at which papers of mutual interest were presented.

In the chairman's annual address, Don E. Francke of Ann Arbor, Mich., suggested that the Society undertake the following activities in the immediate future:

1. There must be constant activity to increase the membership of the Society and to encourage

the formation of affiliated local and regional organizations of hospital pharmacists.

2. The Society should establish a class of membership under the title of "Fellow of the American Society of Hospital Pharmacists." This title should be reserved for those who have been in hospital practice for a least three to five years.

3. The Society should actively cooperate with the Committee on the Pharmaceutical Survey. This important opportunity to bring the problems of hospital pharmacy to educators and others should not be overlooked or treated lightly.

4. The Society should propose regulations to bring the practice of pharmacy in hospitals under the supervision of a qualified pharmacist. These regulations should include the practice of pharmacy in hospitals where the employment of a full-time pharmacist can be justified as well as the very large number of hospitals, including nursing homes, sanatoria, and small private hospitals where at present no qualified pharmacy service is offered. It is estimated that approximately 3000 hospitals in the country are without pharmacy service today. On August 10 the President signed the Hill-Burton bill providing \$1,125,000,000 for new hospital construction over a five-year period. This is equivalent to providing for 1125 new one-million dollar hospitals and greatly expands the need of pharmacy service in the nation's hospitals.

5. In those states which do not now give full credit for pharmacy experience gained in hospital pharmacies the Society should actively campaign to correct this unfair and discriminatory practice.

6. The Society should encourage teaching of hospital pharmacy in the nation's colleges of pharmacy.

7. The Society should promote the continuation of annual Institutes on Hospital Pharmacy.

Upon taking office as the new chairman, Hans

S. Hansen of Chicago emphasized that the continued success of the Society depended to a great extent on the activities undertaken during the next few crucial years and urged all to cooperate to increase the membership and to expand the Society's activities.

Following installation of the new A. S. H. P. officers [see September issue] nominations for 1947-1948 officers to be elected by mail ballot this fall were announced. They are: for chairman, Donald A. Clarke, The New York Hospital, and Dr. Arthur Purdum, The John Hopkins Hospital, Baltimore; for vice-chairman, Margaret Savage Gary, U. S. Marine Hospital, Norfolk, and Mildred Carlisle, Pennsylvania Hospital, Philadelphia; for secretary, Leo Godley, New York University Clinic, and Paul Cole, Michael Reese Hospital, Chicago; and for treasurer, Sister Etheldreda, St. Mary's Hospital, Brooklyn, and Sister M. Clara Francis, St. Joseph Hospital, Memphis, Tenn.

A resolution was adopted by the American Society of Hospital Pharmacists to grant an honorary life membership to both Dean Edward Spease and Harvey A. K. Whitney who have been instrumental in raising the standards in hospital pharmacy.

Named to continue as editors of *The Bulletin* of the American Society of Hospital Pharmacists were Don E. Francke, who has served as editor for the past three years, and Miss Gloria Niemeyer. The resolution proposed by the committee on *The Bulletin* also provided that advertising not be accepted unless necessary and that the AMERICAN PHARMACEUTICAL ASSOCIATION will be asked to cooperate in publication.

OXIDIZED CELLULOSE GAUZE USED FOR NASAL HEMORRHAGE

Oxidized cellulose gauze has been reported as particularly valuable in securing hemostasis in certain nasal conditions. Dr. Karl Houser of Philadelphia found this material to have advantages over cauterization and nonabsorbable gauze packing for controlling spontaneous nasal hemorrhages.

The physician inserts sufficient oxidized cellulose gauze with enough pressure to control bleeding. The packing is never removed, for in about sixty hours it becomes a jelly-like mass that comes away without instrumentation.

When ordinary gauze is used, bleeding often recurs upon removal of the packing because of adherence to the hemorrhagic mucosa.

—*J. Am. Med. Assoc.*, 132:143, 1946

Hospital Queries

WITH this issue the JOURNAL inaugurates a new service for hospital pharmacists and others with problems peculiar to the institutional practice of pharmacy. From time to time the JOURNAL receives inquiries of this type which are given personal replies based on the most authoritative information available.

As such material often proves to be of general interest, selected queries and answers will now be published periodically in this column.

Pharmacists are invited to submit their problems in any phase of hospital pharmacy practice, such as administrative and service procedures,



JOHN J. ZUGICH

equipment requirements and sources, technical problems, and library facilities. All inquiries will receive personal replies to the extent that information is available. Material of general interest will be published later in this department. A selection of typical queries and answers appears below.

This service is conducted for the JOURNAL by John J. Zugich, chief pharmacist of New Haven Hospital, New Haven, Conn., teaching affiliate of the Yale College of Medicine.

Mr. Zugich, a University of Illinois alumnus, has had wide experience in hospital pharmacy, having spent four years at University Hospital, Ann Arbor, Mich., where he worked as an intern and subsequently as supervisor of both the laboratory and the dispensary, and as senior pharmacist. Upon appointment as chief pharmacist at Oak Ridge Hospital, Oak Ridge, Tenn., Mr. Zugich was given the responsibility of organizing the pharmacy which supplied medicinals to the people of Oak Ridge. In a short time the pharmacy department was greatly expanded both in size and services to accommodate this rapidly growing city where much of the initial work on the atomic bomb was carried out.

Mr. Zugich is a member of the AMERICAN PHARMACEUTICAL ASSOCIATION and has long been active in the American Society of Hospital Pharmacists. He was a member of the faculty of the recent Institute on Hospital Pharmacy and has served as president of the Southeastern Hospital Pharmacy Association. He has published a number of articles in professional periodicals and is author of a monthly feature on therapeutics in *Southern Hospitals*.

In consenting to conduct the column, Mr. Zugich asks for the cooperation of other hospital pharmacists in supplying information on request when they have specialized knowledge in some phase of practice. Through this medium it is hoped that a freer interchange of information will be established to help raise the over-all level of practice in hospital pharmacy. Queries should be addressed to THIS JOURNAL, 2215 Constitution Ave., N. W., Washington 7, D. C.



— QUERIES —

PRINTING A FORMULARY

Our formulary will shortly be in manuscript form. We are not sure whether reproduction by "mimeo" or "ditto" machines within the institution will prove practical in comparison to a bound, printed book. What would you suggest as an inexpensive printing process for our initial edition of the formulary?

Your telephone book will indicate printing and duplicating firms that can give you estimates on

the "multilith" process as a less expensive method comparable to printing. Publishing the formulary through use of duplicating processes available in the institution is both economical and practical, but the finished product is not apt to be esthetically impressive. This may be advisable for your first edition to give the staff an opportunity to test the compilation in use. Any suggested changes in content and arrangement or correction of inadvertent errors can then be taken care of in a final printed and bound edition.

SEPARATE PHARMACY FOR CLINIC?

Our hospital is building a clinic building soon with sufficient space for a new pharmacy. I would appreciate an opinion on the advisability of moving the entire present pharmacy into it as one unit, or keeping two separate units, one in the hospital and the other in the clinic.

There are many factors to consider on the most efficient location. Basically determine the activity that contributes toward the heaviest "load." Centralization there of a single unit is the most ideal for efficiency. If the clinic is too distant from the main hospital it may be necessary to have two units. This may be overcome by the use of a full-time messenger to distribute and pick up pharmacy requests at designated intervals, if one unit is decided upon.

PERPETUAL INVENTORY SYSTEM

I would like to institute a perpetual inventory system on all the stock in our hospital pharmacy. Would you suggest a form?

Actually a "perpetual" inventory card or file system in the strict sense of the word will only be practical if you have sufficient assistance to note all issuances and disbursements. On the surface, it may only be feasible in a small hospital where volume is low. Since pharmaceuticals are "expensible," a record form as listed below will at the end of several months give you sufficient data. A card listing "Date ordered," "Requisition or Invoice Number," "Supplier," "Quantity," "Unit," "Price," "Date Received," and if you wish in addition "Disbursements" can be used as a basic form to be amended as you see fit for your operation. An office supply branch might give added assistance through study of their various forms for stock cards, which could be modified to your needs.

PRESENT STATUS OF STREPTOMYCIN

WHEN commercial distribution of streptomycin began in September about 1600 general hospitals were designated as depots for the drug. Although supplies remain inadequate to meet the demand, any non-depot hospital or any physician may call upon a depot hospital for the purchase of streptomycin for treatment of streptomycin-indicated conditions. In cases of established need, the Civilian Production Administration has asked that depot hospitals recognize the requests of other institutions to the best of their ability in consideration of their supply on hand. Each depot hospital is limited to a monthly quota, however, and only when total supplies permit can additional quantities be made available even for justified needs.

If a non-depot hospital is unable to obtain streptomycin from a designated depot hospital in its area, the hospital may communicate directly with the Chemicals Division, Civilian Production Administration, Attention: Dr. Edward O. Haenni, Washington 25, D. C. The telephone number is Republic 7500, Extension 73267 or 73268.

This distribution system is very similar to that used initially for penicillin. Officials point out that it is a temporary procedure until sufficient streptomycin is available to provide a reasonably equitable supply through normal channels of distribution to all hospital and retail pharmacies.

Until the present distribution plan was established, the small supplies of streptomycin available had been distributed by CPA for urgent needs of the Army, Navy, Public Health Service, Veterans Administration, and for the National Research Council's integrated clinical research program directed by Dr. Chester S. Keefer.

The latter constituted the first privately financed, nationally coordinated clinical evaluation in history. It was made possible by a joint contribution of nearly \$1,000,000 from pharmaceutical and chemical manufacturers who produce streptomycin. In addition the manufacturing laboratories invested something over \$20,000,000 in production facilities for a drug that until recently remained an enigma.

From the beginning streptomycin has typified the difficulties of placing a new antibiotic drug in the hospital and retail pharmacy. In discovering the streptomycin-producing organism, Waksman and his co-workers had examined thousands of actinomycetes, fungi and bacteria isolated from soils, manures and peat bogs.

Many special techniques had to be devised and false starts made before it was possible to suggest that the antibiotic substance from *Streptomyces griseus* might provide the long-sought chemotherapeutic agent that would be practical therapeutically against gram-negative bacteria.

Then came difficult problems of determining the most productive strains, the best media for growth and methods of isolation, purification and assay. There were extensive investigations of chemical and biological properties, of the bacteriostatic spectrum and toxicity studies.

As clinical trials got under way, evaluation was greatly speeded by carefully controlled streptomycin distribution for experimental use under Dr. Keefer's direction. The results of this nationally coordinated clinical trial have now been made available in the report by Dr. Keefer reproduced on page 461. The CPA requests that all physicians use streptomycin so far as possible in accordance with these recommendations.

During past months many production difficulties have been encountered, both because of new types of processes and equipment required and because of continued postwar shortages of needed materials. By granting highest priority assistance for construction of streptomycin plants the CPA has helped to increase streptomycin production rapidly.

As limited quantities of streptomycin became sufficient to permit some civilian medical use, in addition to continued clinical research, the present plan was established to make the drug "available to the greatest number of patients to whom its administration is justified in current medical practice in the shortest period of time without wasting material."

In explaining this procedure the CPA commented further. "In order to reach immediately the greatest need and because frequent parenteral administration is required, it was recognized that hospitals represented the best mechanism for initial distribution.

"Supplies will not be adequate at first for complete distribution to hospitals, or for distribution to wholesalers and prescription pharmacies . . . When the supply of streptomycin for civilian use increases to the point where it is considered ample," pharmacists were assured, "this procedure will be discontinued and all manufacturers will employ their respective methods of commercial distribution through whatever channels they prefer."

INDICATIONS, CONTRA-INDICATIONS, MODE OF ADMINISTRATION, DOSAGE AND TOXIC EFFECTS OF STREPTOMYCIN

A GUIDE to the use of streptomycin hydrochloride or sulfate, based upon a study of 1500 cases reported by physicians from all parts of the United States. This report has been prepared by Dr. Chester S. Keefer, chairman of the Committee on Chemotherapeutics and Other Agents of the National Research Council.

GROUP I INDICATIONS

1. All cases of tularemia.
2. All cases of *H. influenzae* infections:
 - Meningitis.
 - Endocarditis.
 - Laryngotracheitis.
 - Urinary tract infections.
 - Pulmonary infections.
3. All cases of meningitis due to:
 - E. coli*.
 - B. proteus*.
 - B. Friedlander*.
 - B. Lactis aerogenes*.
 - B. Pyocyaneus*.
 - B. paratyphoid*.
4. All cases of bacteremia due to gram negative organisms:
 - E. coli*.
 - B. proteus*.
 - A. aerogenes*.
 - Ps. aeruginosa* (*B. pyocyaneus*).
 - B. Friedlander*.
5. Urinary tract infections due to:
 - E. coli*.
 - A. aerogenes*.
 - B. proteus*.
 - B. Friedlander*.
 - B. Lactis aerogenes*.
 - H. influenzae*.
 - Ps. aeruginosa*.

INDICATIONS IN GROUP II

Streptomycin has been found to be a helpful agent in the treatment of the following diseases but its position has not been definitely defined.

1. Peritonitis due to gram-negative bacilli.
2. *B. Friedlander's* pneumonia.
3. Liver abscesses due to gram-negative bacilli.
4. Cholangitis due to gram-negative bacilli.
5. Penicillin-resistant but streptomycin-sensitive organisms infecting heart valves.
6. Tuberculosis.
7. Chronic pulmonary infections due to mixed gram-negative flora.
8. *Empyema due to gram-negative infections.*

CONDITIONS IN GROUP III OF QUESTIONABLE VALUE

Streptomycin is of questionable value in the following conditions:

1. Typhoid fever.
2. Brucellosis.
3. Salmonella infections.

GROUP IV CONDITIONS IN WHICH STREPTOMYCIN IS INEFFECTIVE

Streptomycin is ineffective in the following conditions:

1. All *Clostridia* infections.
2. Malaria.
3. Rickettsial infections.
4. Infections with moulds and fungi.
5. Virus infections.

CONTRA-INDICATIONS TO USE OF STREPTOMYCIN

It should be pointed out that while streptomycin may have an inhibiting effect on both gram-positive as well as gram-negative microorganisms, most strains of gram-positive organisms are much more sensitive to penicillin than to streptomycin. Therefore penicillin continues to be the drug of choice in the treatment of staphylococcal, streptococcal, pneumococcal, gonococcal and meningococcal infections. Occasionally an infection due to a gram-positive organism may be resistant to penicillin and susceptible to streptomycin. In such instances streptomycin should be used. The decision can be made by testing the infecting organism for resistance to both penicillin and streptomycin *in vitro*.

It should be remembered, therefore, that penicillin continues to be the drug of choice in all susceptible gram-positive coccal infections, and in infections due to the gonococcus and meningococcus. Streptomycin is the drug of choice in susceptible gram-negative bacillary infections.

TOXICITY

All patients who are treated with streptomycin should be watched carefully for various reactions. Streptomycin is not a homogeneous product and certain patients will develop signs of hypersensitivity or toxicity. The following reactions have been recorded:

1. Pain and tenderness at local site of injection.
2. Headache.
3. Fever.
4. Skin eruptions.

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It should be remembered, therefore, that penicillin continues to be the drug of choice in all susceptible gram-positive coccal infections, and in infections due to the gonococcus and meningococcus. Streptomycin is the drug of choice in susceptible gram-negative bacillary infections.

TOXICITY

All patients who are treated with streptomycin should be watched carefully for various reactions. Streptomycin is not a homogeneous product and certain patients will develop signs of hypersensitivity or toxicity. The following reactions have been recorded:

1. Pain and tenderness at local site of injection.
2. Headache.
3. Fever.
4. Skin eruptions.

5. Tachycardia and fall in blood pressure.
6. Eighth nerve disturbances—i.e., vertigo, tinnitus, deafness.
7. Paraesthesias about the face.
8. Flushing of the skin.

When skin eruptions occur it is well to discontinue the drug. When patients receive streptomycin for three weeks practically all of them develop vertigo which persists in varying degrees of severity for days or weeks after streptomycin is discontinued. It is most noticeable in ambulatory patients and there is some evidence that the vertigo is due to labyrinthian disturbances which are irreversible.

STREPTOMYCIN RESISTANCE AND FASTNESS

Many infections due to gram-negative bacilli are extremely resistant to the action of streptomycin. One of the reasons for many clinical failures is the inability to give enough streptomycin to inhibit the growth of the infecting organism. Another reason for failures of treatment is due to the rapid development of resistance to streptomycin *in vivo*. That is to say, many organisms develop resistance to streptomycin with amazing rapidity even when maximum tolerated doses are given early in the course of therapy.

It is recommended, therefore, that all organisms be tested for their sensitivity before the onset of treatment and that adequate amounts of streptomycin be given from the beginning of treatment. That is, a sufficient concentration of streptomycin should be maintained in the tissues and in the urine to completely inhibit the growth of the infecting organisms.

METHOD OF PREPARING STREPTOMYCIN FOR TREATMENT

Streptomycin is supplied in ampoules containing 0.5 to 1.0 gram each. There are two salts in common use, streptomycin hydrochloride and streptomycin sulfate. They are both readily soluble in small amounts of sterile pyrogen-free water or normal physiologic saline solution in concentrations of 100 to 125 mg. per cc. Streptomycin is relatively thermostable and neither the powder nor the solutions show any appreciable loss of potency at room temperature for periods as long as a month. It is well, however, to store solutions in the ice box when not in use.

1. For Intramuscular or Subcutaneous Injection:

The total volume of individual injections should be small—i.e., 100 to 125 mg. per cc. A small amount of 1 per cent procaine hydrochloride solution may be added to the solution to alleviate pain. The local application of an ice bag may also decrease the pain at the local site of injection.

2. For Intrathecal Injection:

Twenty to 50 or 100 milligrams may be dissolved in 5 to 10 cc. of sterile salt solution for injection into the subarachnoid space every 24 hours.

3. For Intrapleural or Intraperitoneal Injection:

One-half to one gram may be dissolved in 20 to 50 cc. of sterile salt solution for injection into the pleural or peritoneal cavity.

METHODS OF ADMINISTRATION OF STREPTOMYCIN

There are three common methods of administering streptomycin—subcutaneous, intramuscular, and intrathecal. Intermittent intravenous administration has no advantage over the intramuscular method and since it may produce disagreeable side reactions this route of administration should be avoided. Intermittent intramuscular injections is the preferred method. The gluteal, thigh or deltoid muscles are best suited for injections, and it is important to rotate the site of injection between doses.

DOSAGE

The dosage of streptomycin will vary from one patient to another depending on the type and severity of infection. The objective in every case is to bring the infection under control as quickly as possible. Inasmuch as acquired resistance *in vivo* occurs rapidly in some patients with infections due to susceptible organisms, maximum doses should be used from the onset.

It is well to remember that resistance may develop in spite of the use of maximum tolerated doses. Also that streptomycin is excreted promptly in the urine. Repeated intramuscular injections every 3 or 4 hours should be employed.

1. *Tularemia*. Dosage—240 milligrams to 1 gram in divided doses of 30 to 125 mg. every 3 hours for 5 to 7 days depending upon the clinical course of the disease and response to treatment. Intermittent intramuscular injection route of choice.

2. *H. Influenzae meningitis*. Dosage—Intermittent intramuscular injections—0.5 to 1.0 gram daily in divided doses of 50 to 125 mg. every 3 hours for 5 to 7 days. *Intrathecal* injection of 50 mg. streptomycin once daily for 7 days. In all cases, blood cultures, throat cultures and spinal fluid cultures should be made daily. Complicating staphylococcus infections should be watched for in all cases.

3. *Urinary tract infections*. Dosage—1 to 3 grams daily in divided doses every 3 hours for 5 to 7 days depending upon the type of infecting organism and the clinical response. Constitutional and local signs of infection may disappear without sterilization of the urine. Factors that interfere with the sterilization of the urine are

obstruction to the free flow of urine, renal calculi and the development of resistance of the infecting organism, or the appearance of new and resistant organisms. The most sensitive organisms are *B. proteus*, *Ae. aerogenes*, *B. Friedlander*, *E. coli*. More resistant organisms are *Ps. aeruginosa*, *Salmonella*, *Streptococcus faecalis*, *Enterococci*.

4. *Bacteremia due to susceptible gram-negative bacilli*. Dosage—2 to 4 grams daily in divided doses every 3 hours for 7 to 10 days depending upon site of lesion, species of organism and response to therapy.

5. *Peritonitis due to gram-negative bacilli*. Peritonitis being a complex infection often due to a mixture of organisms some of which are sensitive to penicillin and others to streptomycin, it is difficult to assess the relative importance of streptomycin and other forms of therapy which are employed in a given case. In view of experimental studies in peritonitis of animals and the studies which have been carried out in man, there are reasons for believing that streptomycin is helpful in this group of diseases. Dosage—2 to 4 grams daily in divided doses every 3 or 4 hours for 5 to 10 days.

6. *Liver abscess and cholangitis*. Streptomycin is excreted in part in the bile and for that reason it has been used in cases of liver abscess and cholangitis with varying results. When susceptible organisms are present it may assist in inhibiting the infection. The dosage is the same as in the case of peritonitis.

• 7. *B. Friedlander's pneumonia*. Some strains of *Friedlander bacilli* are extremely sensitive to the action of streptomycin. A few acute cases with pneumonia have recovered. Two to three grams a day for 5 to 10 days should be used. The cases of chronic *Friedlander's* infection of the lung have not responded in a permanent fashion.

8. *Chronic pulmonary infections due to mixed bacterial flora*. Streptomycin parenterally or by inhalation has proved of value in some patients with chronic pulmonary suppuration. When used by inhalation, concentrations of 50 mg. per cc. may be inhaled in a total amount of 500 mg. over a 24-hour period. Parenteral injections of 1 to 3 grams a day in divided doses have been used.

9. *Endocarditis*. Occasional patients with bacterial endocarditis due to penicillin-resistant and streptomycin-sensitive organisms may recover temporarily following streptomycin

therapy. The dosage should be 2 to 4 grams daily in divided doses for a minimum period of 3 to 4 weeks.

10. *Tuberculosis*. In view of the present limitation of supplies of streptomycin and the uncertainties of the amounts that will be available in the next six months, it is the opinion of the Committee that no patient with tuberculosis should be started on treatment with streptomycin unless the physician is reasonably certain that he can obtain enough material for a minimum period of 3 to 4 months' treatment, using 1.5 to 3.0 grams daily (a minimum amount of 135 to 270 grams for an individual patient). Moreover, every patient should be warned that when streptomycin is given in this amount they will develop vertigo which is due to disturbances in the labyrinth which are irreversible. That is to say, they are permanent. Once vertigo appears, many patients learn to compensate for it so that it becomes less noticeable with the passage of time but caloric tests show that disturbances in vestibular function are permanent.

Insufficient or inadequate treatment will inevitably lead to many disappointments. It should be stressed that streptomycin will not replace any of the established forms of treatment and it should never be used as a substitute for other forms of therapy.

11. *Empyema*. The use of streptomycin locally in the treatment of empyema may end in the sterilization of the cavity. The injection of 0.5 to 1.0 gram daily directly into the pleural cavity along with systemic treatment should be used in all cases.

DISEASES IN WHICH THE EFFECT OF STREPTOMYCIN IS QUESTIONABLE

1. *Typhoid fever*. From the results that have been obtained so far there is no evidence that streptomycin shortens the clinical course of typhoid fever. The dosage has been from 4 to 5 grams daily in divided doses intramuscularly every 3 hours for 10 to 14 days.

2. *Salmonella infections (systemic)*. So far the results have been inconclusive when 4 grams are given daily in divided doses intramuscularly every 3 hours for 7 to 17 days.

3. *Acute brucellosis*. The course of an acute attack of fever due to brucellosis is not appreciably shortened when 4 grams are given daily in divided doses intramuscularly every 3 hours for 10 to 14 days.

August, 1946



PRODUCTS RECENTLY ACCEPTED BY THE
A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY

Council descriptions of drug products are published regularly in This Journal as they are accepted. Rules upon which the Council bases its action appeared in the July (7:320) 1946 issue and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago.

ALUMINUM HYDROXIDE GEL (See New and Nonofficial Remedies, 1945, p. 398).

The following dosage form has been accepted:

THE RESERVE RESEARCH CO., CLEVELAND

Aluminum Hydroxide Gel: 360-cc. bottles. Contains 5.5 per cent of aluminum hydroxide (equivalent to 3.6 per cent of aluminum oxide) and, as a flavoring agent, oil of peppermint.

PHENOBARBITAL SODIUM (See New and Nonofficial Remedies, 1945, p. 524).

The following additional dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Phenobarbital Sodium (Powder): 0.324 Gm. in 2-cc. ampuls.

NIKETHAMIDE (See New and Nonofficial Remedies, 1945, p. 345).

The following dosage form has been accepted:

THE NATIONAL DRUG CO., PHILADELPHIA

Solution Nikethamide 25% W/V: 2-cc. and 5-cc. ampuls and for oral use 15-cc. and 120-cc. bottles with 0.5 per cent chlorobutanol added as a preservative.

NICOTINAMIDE (See New and Nonofficial Remedies, 1945, p. 618).

The following additional dosage form has been accepted:

INTERNATIONAL VITAMIN CORPORATION, NEW YORK

Tablets Niacin Amide: 100 mg.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 610).

The following additional dosage form has been accepted:

INTERNATIONAL VITAMIN CORPORATION, NEW YORK

Tablets Thiamine Hydrochloride: 3 mg.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 97).

The following additional dosage forms have been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Sterile Procaine Hydrochloride Crystals for Spinal Anesthesia: 500-mg. ampuls.

Procaine Hydrochloride Solution 5% W/V: 10-cc. ampuls. Each 10 cc. contains procaine hydrochloride 0.5 Gm. in water with 0.1 per cent sodium thiosulfate.

Procaine Hydrochloride Solution 20% W/V: 5-cc. ampuls. Each 5 cc. contains procaine hydrochloride 1 Gm. in water with 0.1 per cent sodium thiosulfate.

VITAMIN D (See New and Nonofficial Remedies, 1945, p. 626).

The following additional dosage form has been accepted:

WINTHROP CHEMICAL CO., INC., NEW YORK

Drisdol in Propylene Glycol: 10-cc. bottles. Each cubic centimeter contains 0.25 mg. of drisdol and has a potency of 10,000 units of vitamin D (U. S. P.) per gram. The propylene glycol used in the preparation of this product complies with the standards for propylene glycol-N. N. R.

METAPHEN (See New and Nonofficial Remedies, 1945, p. 150).

The following additional dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Metaphen Disinfecting Solution for Dental and Surgical Instruments: 946-cc. and 3785-cc. bottles. Contains Metaphen 1:2500 w/v and benzyl alcohol 4.0 per cent in an aqueous solution containing ethylene glycol 20.0 per cent w/v and sufficient sodium hydroxide and sodium carbonate to neutralize the metaphen.

MANNITOL HEXANITRATE (See New and Nonofficial Remedies, 1945, p. 334).

The following dosage form has been accepted:

GEORGE A. BREON & CO., INC., KANSAS CITY, MO.

Tablets Mannitol Hexanitate: 30 mg.

ANTHRALIN (See New and Nonofficial Remedies, 1945, p. 117).

The following dosage form has been accepted:

WINTHROP CHEMICAL CO., INC., NEW YORK

Cignolin: 10-Gm. bottles. Crystalline anthralin.

PERTUSSIS VACCINE, ALUM PRECIPITATED (See *J. Am. Med. Assoc.*, Jan. 5, 1946, p. 31).

The following dosage form has been accepted:

SHARP & DOHME, INC., GLENOLDEN, PA.

Pertussis Bacterin, Alum Precipitated: 3-cc. vial (one immunization) and 10-cc. vial (three immunizations). 10,000 million *H. pertussis* per cubic centimeter. Preserved with phenylmercuric nitrate 1:50,000.

BACTERIAL VACCINE MADE FROM HEMOPHILUS PERTUSSIS (See *J. Am. Med. Assoc.*, Jan. 5, 1946, p. 31).

The following dosage form has been accepted:

WYETH INCORPORATED, PHILADELPHIA

Pertussis Vaccine (Modified): 12-cc. and 20-cc. vials. 15,000 million *H. pertussis* per cubic centimeter. Preserved with phenol 0.5 per cent.

PENTOTHAL SODIUM (See New and Non-official Remedies, 1945, p. 517).

The following additional dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Pentothal Sodium (Rectal): 3-Gm. vials with 0.18 Gm. anhydrous sodium carbonate as a buffer.

DIETHYLSTILBESTROL DIPROPIONATE (See *J. Am. Med. Assoc.*, March 30, 1946, p. 857).

The following dosage forms have been accepted:

GEORGE A. BREON & CO., INC., KANSAS CITY, MO.

Caplets Diethylstilbestrol Dipropionate: 0.2 mg., 0.5 mg., 1.0 mg. and 5.0 mg.

Solution Diethylstilbestrol Dipropionate (In Sesame Oil): 1.0 mg. per cc. in 1-cc. ampuls.

ESTROGENIC SUBSTANCES (See New and Nonofficial Remedies, 1945, p. 436).

The following dosage form has been accepted:

BARRY BIOLOGICAL LABORATORY, DIVISION OF
BARRY ALLERGY LABORATORIES, INC., DETROIT

Solution Estrogenic Hormones (Natural): 30-cc. and 100-cc. vials containing the equivalent of 10,000 international units per cubic centimeter of estrone in sesame oil with chlorobutanol 0.5 per cent as a preservative.

RIBOFLAVIN (See New and Nonofficial Remedies, 1945, p. 614).

The following dosage form has been accepted:

PREMO PHARMACEUTICAL LABORATORIES, INC.,
NEW YORK

Tablets Riboflavin: 10 mg.

PENTOBARBITAL SODIUM (See New and Nonofficial Remedies, 1945, p. 516).

The following dosage form has been accepted:

PREMO PHARMACEUTICAL LABORATORIES, INC.,
NEW YORK

Solution Pentobarbital Sodium: 1-cc. and 2-cc. ampuls. Each cubic centimeter contains pentobarbital sodium 0.1625 Gm. and benzyl alcohol 2 per cent; in propylene glycol.

CONTRACEPTIVE JELLIES AND CREAMS (See New and Nonofficial Remedies, 1945, p. 355).

The following article has been accepted:

LEHN & FINK PRODUCTS CORPORATION, BLOOMFIELD,
N. J.

Lygel Vaginal Cream: 85-Gm. collapsible tubes. A white stearic acid cream having a pH of 3.4, prepared from the formula:

Stearic acid	18.00%
Cetyl alcohol	1.00
Lactic acid	0.35
p-chloro symm. m —Xylenol	0.10
p-tert. amylphenol	0.10
Sorbitol	6.00
Nacconol	2.00
Perfume	0.10
Water to make	100.00

Packaged with a Lygel Vaginal Applicator or in refill packages containing a tube of cream only.

U. S. patent 1,953,413 (April 3, 1934)
U. S. trademarks 343,141 and 248,042

Action, Uses and Dosage.—See article on Contraceptive Jellies and Creams.

ALLERGENIC PREPARATIONS (See New and Nonofficial Remedies, 1946, p. 35).

The following allergenic extracts have been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Allergenic Extracts: The following pollen extracts are marketed in single 5-cc. vials containing 10,000 units per cubic centimeter and in packages containing one 5-cc. vial of the extract, together with three vials containing 4.5 cc. of sterile isotonic sodium chloride diluent for the preparation of solutions containing 1000, 100 and 10 pollen units per cubic centimeter.

Mixed Grass (Sweet Vernal Grass, Blue Grass, Johnson Grass, Redtop and Timothy, in equal parts); Ragweed Pollens (Mixed) (Giant Ragweed and Short Ragweed, in equal parts).

Allergenic extracts-Pitman-Moore are prepared by the following method. The dried pollens are extracted with a menstruum containing an equal volume of glycerin and water, to each hundred cubic centimeters of which has been added sodium chloride 0.15 Gm., sodium bicarbonate 0.135 Gm. and merthiolate 10 mg. as a preservative. After extraction for seventy-two hours the mixture is filtered through paper and then through a Berkefeld filter. The extract is tested for sterility after filtration and also after filling. The finished product represents a 1 per cent extract of the dried pollen. Each cubic centimeter represents 10,000 pollen units; 1 unit corresponds to 0.001 mg. of dried pollen.

PERTUSSIS VACCINE ALUM PRECIPITATED (See *J. Am. Med. Assoc.*, Jan. 5, 1946, p. 31).

The following dosage form has been accepted:

PARKE, DAVIS & Co., DETROIT

Pertussis Vaccine (Alum Precipitated) (Sauer): 1.5-cc. and 6-cc. vials. Each cubic centimeter contains 30,000 million *Hemophilus pertussis* in 0.6 per cent solution of sodium chloride. Preserved with merthiolate, 0.01 per cent.

ESTROGENIC SUBSTANCES (See New and Nonofficial Remedies, 1946, p. 443).

The following additional dosage form has been accepted:

LAKEVIEW LABORATORIES, INC., MILWAUKEE

Aqueous Suspension of Estrogens: 1-cc. ampul and 5-cc. vials. A sterile suspension, each cubic centimeter of which contains estrogenic substances (water insoluble) equivalent to 20,000 international units of estrone, in isotonic solution of sodium chloride.

PENICILLIN (See New and Nonofficial Remedies, 1945, p. 214).

The following additional dosage form has been accepted:

PREMO PHARMACEUTICAL LABORATORIES, INC.,
NEW YORK

Penicillin Sodium: 200,000 unit vials.

SULFADIAZINE (See New and Nonofficial Remedies, 1946, p. 181).

The following dosage form has been accepted:
FLINT, EATON & Co., DECATUR, ILL.

Tablets Sulfadiazine: 0.5 Gm.

PENICILLIN IN OIL AND WAX.—A sterile suspension of calcium penicillin in a mixture of highly refined peanut or sesame oil and white wax, U. S. P., or yellow wax, U. S. P.

Actions and Uses.—Penicillin suspended in oil and wax is slowly absorbed following intramuscular injection. After the injection of 1.0 cc. of a mixture containing 300,000 units of penicillin per cubic centimeter significant blood concentrations of penicillin have been observed for from twelve to twenty-four hours. Injection of lower concentrations decreases the duration of effective penicillin blood levels, 100,000 units giving a measurable blood level for approximately eight hours and 200,000 units being effective for about twelve hours.

Penicillin in oil and wax may be used for all the conditions for which penicillin dissolved in saline solution is used. The principal difference between the two lies in the frequency of injection: saline solutions must be injected once every two to three hours, whereas oil and wax mixtures require injection only every twelve to twenty-four hours.

Dosage.—At least 300,000 units every twenty-four hours should be administered, either as a single dose or in two doses twelve hours apart. For severe infections two 300,000-unit doses twelve hours apart may be necessary. For the treatment of gonorrhea, one injection of 300,000 units of penicillin in oil and wax appears to be sufficient for the majority of cases. If the subjective symptoms do not subside rapidly, a second injection of 300,000 units should be given twenty-four hours after the first.

To facilitate withdrawal and administration of penicillin in oil and wax, a dry, warm syringe fitted with an 18-gage needle should be used to withdraw the mixture from the ampul, which has been warmed to 37 to 39° C. Injection should be made through an 18-gage needle deep into the upper outer quadrant of the buttocks. Before injection the plunger of the syringe should be drawn back slightly to make certain the needle is not in a blood vessel. Intravenous injection may be dangerous.

BRISTOL LABORATORIES, INC., SYRACUSE, N. Y.

Penicillin (Calcium) in Oil and Wax: 300,000 units per cubic centimeter, 10-cc. vials. Calcium penicillin suspended in peanut oil containing 4.8% (w/v) white wax, U. S. P.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Penicillin (Calcium) in Oil and Wax: 300,000

units per cc., 5-cc. vials. Calcium penicillin suspended in peanut oil containing 4.8% (w/v) white wax, U. S. P.

PENICILLIN (See New and Nonofficial Remedies, 1946, p. 212).

The following additional dosage form has been accepted:

COMMERCIAL SOLVENTS CORPORATION, TERRE
HAUTE, IND.

Crystalline Penicillin Sodium: 200,000 and 500,000 units in 20-cc. vials.

SULFANILAMIDE (See New and Nonofficial Remedies, 1946, p. 189).

The following dosage form has been accepted:

FLINT, EATON & Co., DECATUR, ILL.

Tablets Sulfanilamide: 0.25 Gm.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1946, p. 199).

The following additional dosage form has been accepted:

FLINT, EATON & Co., DECATUR, ILL.

Tablets Sulfathiazole: 0.25 Gm.

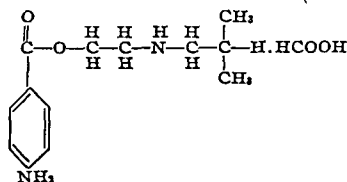
SODIUM DEHYDROCHOLATE (See New and Nonofficial Remedies, 1946, p. 354).

The following dosage form has been accepted:

CARROLL DUNHAM SMITH PHARMACAL CO., ORANGE,
N. J.

Solution Sodium Dehydrocholate 20% W/V:
5-cc. vials.

MONOCAINE FORMATE.—2-Isobutylaminoethyl *p*-aminobenzoate formate.—2-*p*-Aminobenzoxy-N-isobutyl-ethylamine formate.—The formic acid salt of the ester formed from *p*-aminobenzoic acid and the N-isobutyl derivative of ethanolamine. $C_{14}H_{22}N_2O_4$.—M. W. 282.34.



Actions and Uses.—Monocaine formate is proposed for use in spinal anesthesia. Its action is qualitatively identical with that of procaine, but quantitatively it may produce about one-third greater anesthetic and toxic effect. For this reason approximately only three-fourths of the amounts usually employed for procaine can be given with an equal degree of safety and anesthesia.

Dosage.—As with the use of other agents for spinal anesthesia the dosage is dependent on the speed and mode of injection, the size of the patient and the length of the operative procedure to be performed. As already indicated, the dosage of monocaine should

correspond to about three-fourths of that ordinarily employed for procaine.

Tests and Standards.—

Monocaine formate occurs as odorless, white crystals, which melt at 136–139° C. It is freely soluble in water and in ethanol; very slightly soluble in benzene, and slightly soluble in chloroform and in ether. The pH of a 1 per cent aqueous solution is about 6.1.
For tests and standards see *J. Am. Med. Assoc.*, 132: 23, 1946.

NOVOCOL CHEMICAL MFG. CO., INC., BROOKLYN

Monocaine Formate (Crystals): 50-, 100-, 150- and 300-mg. ampuls; 200- and 500-mg. containers (multiple dose). For spinal anesthesia.

Sterile Solution Monocaine Formate 5%: 2-cc. ampuls for spinal anesthesia. Each cubic centimeter contains 50 mg. of monocaine formate in sterile distilled water.

U. S. patent 2,139,818 (Dec. 13, 1938; expires 1955).
U. S. trademark 353,653.

PENICILLIN FACTS AND RUMORS

Recent articles in periodicals of wide circulation have created unwarranted fears in the minds of the public concerning the value of penicillin and other new remedies.

Unfortunately, some of the articles are factually incorrect. The creation of doubts and fears in the minds of patients concerning the therapy which they receive may prevent the fullest realization of benefits from treatment.

Physicians should be in a position to give their patients the facts concerning penicillin and to allay any doubts or fears created by these publications. Briefly, the facts concerning the latest developments in penicillin therapy are as follows:

1. Commercial penicillin has consisted of varying mixtures of one or more of the five known fractions, F, G, X, K and dihydro F.

2. Penicillin K is apparently rapidly destroyed or eliminated in the body, and therapeutic levels are not achieved or maintained in the body fluids following ordinary doses.

3. Commercial penicillin now available is predominantly penicillin G, which is known to be effective although some of the penicillin produced for a few months in 1945 may have had relatively less G and more K than previous or subsequent batches.

4. As far as facts are available, penicillins F and X are as active clinically as penicillin G. Further research will be necessary to define their usefulness with preciseness.

5. Since precise methods are not available for the routine determination of the quantities of each fraction in each batch of penicillin, the National Research Council has recommended increased dosage of penicillin as a safety precaution, particularly in the treatment of syphilis, in which the end result of therapy cannot be evaluated for a long time.

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The peace of mind, the security of knowing you are safe and will be promptly paid if you have a loss, is worth more than the premium cost.

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THE AMERICAN DRUGGISTS' FIRE INSURANCE COMPANY

CINCINNATI 2

OHIO

6. Although bacteria have been made resistant to penicillin in the test tube, development of clinical resistance has not become a problem. Such an eventuality may be prevented, in part, by giving adequate and not minimum doses of penicillin.

7. All penicillin and penicillin pharmaceuticals currently on the market have been examined and certified as to safety and efficacy by the United States Food and Drug Administration.

8. It is possible that natural or synthetic variations of the penicillin molecule will result in the development of a clinically better penicillin. None better than penicillin G is now available.

While it is realized that the rapid developments now being made in therapeutics make it increasingly difficult for busy physicians to read and evaluate the many scientific articles appearing in hundreds of periodicals, the physician can keep himself informed of the more important developments through a study of the Reports of the Council on Pharmacy and Chemistry. Furthermore, the Council office and its personnel are always ready to answer inquiries and furnish information on drugs and therapeutic agents. Physicians, by using this service, can allay the fears of their patients who have come to doubt the efficacy of penicillin even when properly used.

ETHYLENE DISULPHONATE UNACCEPTABLE

(Comment based on Council report)

THIS JOURNAL has received numerous inquiries concerning Ethylene Disulphonate, an ampul preparation marketed by the Spicer-Gerhart Co. of Pasadena, Calif. (laboratory at Sunland, Calif.). On the basis of authoritative medical opinion, the JOURNAL has commented adversely on this product both in print and in correspondence. The solution is essentially distilled water, although the firm claims that it contains a chemical, designated as Ethylene Disulphonate, in a dilution of 1 to 10^{-16} . Administration is by intramuscular injection for use in treating various allergic conditions.

Although the American Medical Association previously has commented unfavorably on Ethylene Disulphonate, the product has apparently enjoyed considerable use. In view of this the A. M. A. Council on Pharmacy and Chemistry has now compiled an extensive report setting forth the facts of the situation as nearly as they can be determined.

The origin of the use of Ethylene Disulphonate appears to lie in a British report published in 1940. This report advances the theory that an allergic state is the outcome of a disturbance in cellular carbohydrate metabolism and postulates that this is due to the absence or inhibition of an oxidation catalyst of coenzyme activity in the momentary formation of ketene from acetaldehyde. The ketene is presumably the final breakdown product of carbohydrate, leading to the formation of carbon dioxide and water.

The British authors state that "extensive search" was instituted for some substance to "replace this part of the dehydrogenase coenzyme system," thought to be absent because of "inherited faulty metabolism ('inherited allergy') or due to inhibitions by bacterial toxins" and that they "anticipated this as being a short carbon chain compound having two or more unsaturated carbon linkages." They claim to have succeeded in preparing unsaturated bodies from both glucose and fructose and from two carbon chain compounds, such as acetaldehyde, that act physiologically in the manner anticipated, the probable nature of which was said to be "typically that of ethylene disulphonate, which may exist in conjunction with other compounds and/or adsorbed on to specific proteins." The hypothetical formula given was $C_2H_2(SO_3H)_2$.

No actual data have been furnished, however, to indicate how the compound was prepared or selected, or to show the means by which such high dilutions

as 1 to 10^{-16} were found to be optimum. Computation reveals that, for this dilution, 1 mg. of so-called ethylene disulphonate would require more than 250 million gallons of water. The dilution claimed would be equivalent to one-billionth part per million, which is outside the practical limits of detection in the laboratory.

In an effort to investigate claims made for the product the Council on Pharmacy and Chemistry requested an opinion or résumé of results from physicians known to have conducted clinical observations with the product. Of 12 replies received, all but two were unanimous in the opinion that the drug was of no value in any of the various allergic conditions for which it had been tried.

Following the original British report, a number of favorable reports on ethylene disulphonate were published in this country. These are critically analyzed in the statement by the Council on Pharmacy and Chemistry, which may be consulted in full in the *Journal of the American Medical Association*, 131:1495, 1946. The summary from the Council's statement is reproduced below for pharmacists who may receive inquiries or who may have been induced to stock the product:

"From a review of the published reports, the statement by the American Medical Association Chemical Laboratory and replies received from physicians investigating Ethylene Disulphonate in the treatment of various allergic conditions, not only is it evident that the existence of such a compound is open to serious doubt but the theory of its dilution and supposed part as an oxidation catalyst of carbohydrate metabolism is based on flimsy biochemical conjectures that have no proved connection with the mechanism of allergy if, indeed, there is any. Clinical reports of favorable results obtained with the product are based on either entirely uncontrolled or poorly controlled studies that do not eliminate the psychologic effect nor take account of the influence of the scheme of dietary and other measures suggested by the originators and furthermore do not satisfactorily take into account the factor of spontaneous remission that characterized chronic allergic manifestations. In the experimental and clinical studies where distilled water is used as a control, neither protection against anaphylactic shock in animals nor improvement in the symptoms of allergic patients can be attributed to the solution of so-called Ethylene Disulphonate.

"Examination of the product indicates that by ordinary tests it cannot be distinguished from dis-



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tilled water, as might be expected if the so-called substance was present in the high dilution claimed. As against one-billionth of 1 part per million (equivalent of the claimed dilution) the pharmacopœial standard for residue of distilled water provides for not more than 1 mg. per hundred cubic centimeters (10 parts per million), a maximum allowance for ten billion times as much inert material as the claimed amount of active substance in Ethylene Disulphonate (solution)! Neither the originators of the theory employing the British brand, Allergosil (Eudocrine-Spicer, Ltd.), nor the reports on the American counterpart, Ethylene Disulphonate (Allergosil brand), have indicated the method by which such a compound was made, synthetically or otherwise.

"The emphasis of the originators and the American manufacturer on the means to avoid its supposed rapid oxidation by contact with air, metal, oil and certain chemical substances has the effect of concentrating so much attention on the technique that the credulous user is diverted from consideration of the significance of the extreme dilution of the so-called active substance. The statement made by the firm that 'No disinfectant may be used on the site of the injection' is footnoted in its booklet with the statement 'One clinician reports using hydrogen dioxide without deleterious effect.' This tends to imply that ordinary disinfectants may inactivate the supposedly rapidly oxidized, highly unstable Ethylene Disulphonate, yet the firm apparently expects the reader to be unaware that hydrogen dioxide is hydrogen peroxide and capable of acting as an oxidizing agent.

"That the theoretical dilution employed is not likely to reach all the affected tissues in the same concentration has been pointed out. The pain and fibrillation following injection of the product are not different from what would be expected from the injection of an equal volume of any hypotonic solution. Attention is further drawn to the fact that the hypotonic action of distilled water causes muscle injury and that minor muscle injuries often terminate an acute attack of asthma.

"Despite all these rather obvious facts, the manufacturer has apparently achieved considerable success in marketing the product to physicians of this country. The Council therefore presents this published statement to inform the medical profession that the claims for the use of the product in the treatment of allergy are not founded on proved premises and that the available evidence does not support any hopeful claims. The manner in which the manufacturer has exploited the physician and the allergic patient of this country cannot be too vividly described and only supports the Council's plea that physicians seek competent advice before they adopt some new 'cure' or treatment; frequently they will find that it is not new, is not a cure, and for that matter is not even a treatment in the true sense of the word. Ethylene Disulphonate (Allergosil brand) manufactured by the Spicer-

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Gerhart Company of Pasadena and Sunland, Calif., is declared by the Council not acceptable."

**ACCEPTANCE OF PRODUCTS OF FIRMS
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(A report of the Council)

With the adoption of its new rules, the Council on Pharmacy and Chemistry abandoned certain of the old rules, one of which was concerned with the over-all promotional activity of firms submitting products for inclusion in New and Nonofficial Remedies. This does not mean that the Council is receding from its efforts to encourage the ethical and honest promotion of worth-while therapeutic agents; to the contrary, it is intended to make these efforts more effective by taking advantage of the changing attitude of the drug trade.

When the rule was originally adopted, a considerable proportion of pharmaceutical manufacturing firms placed much more emphasis on the exploitation of remedies for profit to the business than for profit to the patient, using a few better articles for "window dressing" rather than for serious promotion. The Council aimed to improve this situation by insisting that the major business of a firm should be in acceptable articles before any of its articles would be accepted by the Council. An increasing number of these firms have made commendable efforts to bring their policies in line with the objectives of the Council. This has been aided by the recent phenomenal developments in positive therapeutics which substitute striking improvement, demonstrable by rigorous methods, for the wishful empiricism of galenic fancies and render these even financially unprofitable.

The Council feels that it may safely take advantage of this improved situation and that it can do more good by aiding all firms to increase their proportion of acceptable products than by fighting a foe that is already vanquished. So the Council hopes, at least, but with a watchful eye to conditions. If its hopes should prove too optimistic, it can return to more restrictive policies.

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Typical Days

FROM THE SECRETARY'S AUGUST DIARY

—1ST—

THE new month comes upon us with the startling realization that the convention is only three weeks off and much remains to be done. An August convention plays havoc with vacations of office personnel. Whoever goes is sure to be needed for last minute jobs, but we are fortunate in the cooperative spirit which rules the few who bear the heaviest burdens. And in the midst of all the speculation comes a reassuring call from George Beal that all is progressing nicely at Pittsburgh with a fine local committee and Local Secretary "Steve" Wilson working harmoniously and steadily toward the successful accomplishment of the main objectives

—2ND—

Today came the liaison officers of the Army, Navy and Public Health Service to discuss plans and the final report of the Committee on War Activities and Veterans Affairs. For the record we were photographed with Major Aabel, Commander Reese and Senior Pharmacist Kinsey. Some apprehension about a strike of printers which might have sad effects upon necessary printed matter for the convention. Fortunately the program is in the hands of the "old reliable" Mack Printing Co. which has done this job for many a year.

—3RD—

On this "off day" working at the office on convention reports and thinking of Glenn Sonnedecker speeding in an Army plane with other editors to Oak Ridge in Tennessee to see at first hand the developments in atomic fission which have medical and pharmaceutical significance. It is a tribute to the *Practical Pharmacy Edition* of the JOURNAL OF THE A. PH. A. to have its editor selected as the only pharmaceutical editor to accompany these science writers, under Army auspices, to headquarters of atomic bomb researches for the first public inspection.

—4TH and 5TH—

All these days putting finishing touches on the convention program at the office and working far into the night with able assistants.

—6TH—

Working most of the day with the Committee on Uniform State Laws which is doing splendid work in harmonizing conflicting views on controversial legislation. Principal attention focused on the pro-

posed uniform state barbiturate act. At 5:30 p. m. on the Liberty Limited for Chicago with N. A. B. P.'s Pat Costello, discussing many pending problems and receiving much good advice and information.

—7TH—

Rumbling into Union Station at Chicago at 9:25 a. m., and with Pat Costello making a bee line to the Pennsylvania ticket office to pick up a return reservation to Washington. Next to the College of Pharmacy of the University of Illinois for an all-day meeting with President-elect Serles and Vice-President-elect A. Lee Adams. It is plain that the incoming president of the A. Ph. A. has really studied its organizational structure and committee setup and will streamline some of the latter for more efficient action. Much important business disposed of in short order and after telephone conversations with John Dargavel, Charles O'Malley and Austin Smith, dashing for the homeward bound Liberty Limited due in Washington tomorrow.

—8TH—

Arriving on time in Washington on the Pennsylvania is something to record. And now for the accumulated mail and convention details with a staff conference at lunch and a long evening at the desk.

—9TH—

Among the visitors today was Dean Rivkin of the Pharmacy Department of Southwestern Institute of Technology (Oklahoma).

—10TH—

An experience at the optician's which demonstrates the difference between a professional and a business attitude. Immediate attention was required at 5 p. m. to replace a broken lens on glasses needed very badly. The shop closes at 5:30 p. m. but since the repairs could not be made in half an hour the none too courteous admonition was to return tomorrow for the needed service. No plea of dire necessity had any effect and when we finally indicated that a profession should be ready to serve when its services are needed, especially in the health field, the bland and almost arrogant reply was: "This is not a profession, sir, it is a business and we maintain business hours." Undecided whether or not this carries a lesson for pharmacists. Anyway we shall remember that opticians do not class themselves as professionals.

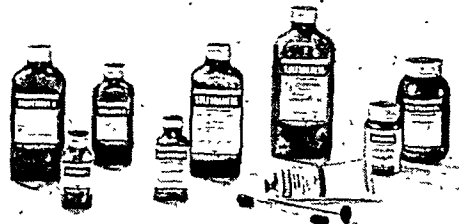
—12TH—

Much of the day with the Committee on Status of Pharmacists in the Government Service, debating strategy with respect to the legislation proposed by the Surgeon-General of the Army to create a Medical Service Corps designed to include pharmacy and supersede the hard-earned Pharmacy Corps. Opportunity also to confer with Dargavel, Swain, DuMez, Henry Johnson and others on A. Ph. A. convention program.

—13TH—14TH—15TH—

All these days at the desk and plugging away on reports and last minute details for the Pittsburgh meeting with telegrams and long distance calls

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galore, but everything seeming to click smoothly.

—16TH—

After the morning at the desk an early afternoon train for home and the quiet celebration of a birthday. As the years keep rolling by ever more speedily, one fathoms more readily the meaning in the words of forebears who longed for added years in which to accomplish that which they foresaw but never experienced.

—17TH—

Enjoying the sight and sound of speedboats on the Shrewsbury River, come for the annual races in this famed spot. A part of the day spent with books and papers so essential to keeping abreast of world affairs in which pharmacy will play no mean part.

—18TH—

And now by automobile to Washington so that this transportation may be available for carrying the precious records and files to Pittsburgh at the week end. A nice day for a six-hour trip to cover 230 miles with traffic not too heavy.

—19TH—

A busy Monday with mail piled high and the telephone jingling merrily. All the staff enthusiastic about the coming meeting at Pittsburgh.

—20TH—

Among the callers today was Roy Jacquith and family from Topeka, Kan., on the way to Pittsburgh.

—22ND—

Visits today from Mrs. A. C. Taylor and Mrs. Charles Fuhrman of Washington, D. C., active workers in the Women's Auxiliary of the A. Ph. A., who were pleased with the newly furnished lounge for our women employees. To dinner at the Watergate with Dr. and Mrs. A. G. DuMez after their visit to our building where Mrs. DuMez noted the furnishings and arrangement of the women's lounge in preparation for a report to the Executive Committee of the Women's Auxiliary.

—24TH—

Now the trip to Pittsburgh with Frank Deibert, Miss Lyons and Miss Bergner in the Dodge, loaded to the top with brief cases, filing cabinets, displays, reports and what not. Making good time via Frederick, Hagerstown, Breezewood and the fine Pennsylvania Turnpike, with a stop-off for luncheon at Hagerstown and arriving in Pittsburgh at 7:30 p. m.

—25TH-30TH—

These days at Pittsburgh carrying on throughout the 92nd convention in the 94th year of the history of the A. Ph. A. All of which has been described elsewhere in this and previous issues of the JOURNAL. It was a great convention because the people who attended and the officers, speakers and committee chairmen who furnished the inspiration and food for thought that made up the program were well prepared and the membership attended meetings on time and contributed to the discussion of vital programs, all of which led to conclusions now in the form of resolutions and ready for translation into action.

—31ST—

Now comes the reorganization meeting of the Council with the departure of several members whose terms expired and the addition of new men in their places. Thus we lose the two Charlies, Evans and Wilson, and take in Earl Serles, A. Lee Adams, Harold Darnell and Glenn Jenkins. It is always with a feeling of sadness that one sees capable and enthusiastic members depart from administrative and policy-forming committees. The compensating feature is that the ASSOCIATION is composed of many able minds and willing hands so that capable replacements are available. All the forenoon and much of the afternoon reviewing the resolutions and planning the activities for the year to come. Next with Editor Sonnedecker preparing parts of the report of the convention to make sure of its inclusion in the September JOURNAL which should be out within 10 days.

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Moore, Tom L., Mobile
Priddle, Osgood Daniel, Jr., Birmingham
Sister Vincent Kurtzeman, Birmingham
Williams, Harrison M., Birmingham

ARIZONA

Dudding, Charles W., Holbrook
Duncan, Alfred J., Glendale
MacAlpine, Fred C., Phoenix
Prell, Isadore, Tucson

ARKANSAS

Albritton, John H., Clarksville
Brown, Ben E., Ft. Smith
Neal, Marvin B., West Crossett
Willmon, Prince A., Ft. Smith

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Barnum, Florice, Los Angeles
Boles, Manfred J., Pasadena
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Buxton, Charles E., Eureka
Clark, Hewey V., San Francisco
Cool, Harold N., Culver City
Fansher, John T., Romona
Foote, Frank A., Long Beach
Johanson, Iver E., Redding
Kingwell, Benjamin J., Pasadena
Kohn, Leonard N., Mount Shasta
Margolin, Leon, South Gate
Mir, Frank, Sacramento
Mooers, Clyde C., Brentwood
Morgan, Irwin R., Bakersfield
Mortensen, Mark M., Gustine
Okamoto, S. H., San Francisco
Oreggia, Sabina S., Gonzales
Solow, Morris A., Los Angeles
Tobis, Abe, Los Angeles
Wurster, Martin J., San Francisco
Yant, Zelba, Pomona

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Chirnside, Lloyd M., Denver
Greenfield, Lewis J., Denver
Hyde, John F., Denver

Lane, Frank A., Denver
Petersen, Eugene E., Salida

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Laskarzewski, Joseph J., Meriden
Leff, Aaron M., New Haven
Leone, Daniel C., Norwich
Parks, C. Clayton, Washington Depot
Schine, Samuel, Bridgeport
Sullivan, Daniel G., Watertown
Weisman, Isadore, Bristol
White, Wallace F., North Haven
Windt, Ernest, New Canaan

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Webb, Harry C., Wilmington

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Donaldson, John E., Washington
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Falcon, Howard J., Delray Beach
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Troxler, T. L., St. Petersburg

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Fuller, George L., Augusta
Gaines, W. C., Atlanta
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Roberts, Y. L., Donalsonville

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Cleveland, Harold V., Waukegan
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Daab, John A., Columbia
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Elder, Otto V., Chicago
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Mottar, John A., Edwardsville
Mrazek, Leo L., Chicago
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Palmer, George D., Chicago
Pavlicek, Adolph V., Cicero
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Stahl, August F., Villa Park
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Stoppel, Albert W., Chicago
Stotlar, Jo., Pinckneyville
Volkel, Clarence H., Chicago

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Bogart, Kenneth S., Indianapolis
Buckmaster, S. M., Geneva
Christy, L. E., Fowler
Farmer, Joseph B., Indianapolis
Fifield, Orval W., Hammond
Hatfield, Charles L., Seymour
Hinton, Charles M., Indianapolis
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Lieberman, Morris D., Gary
Miller, Henry C., Fort Wayne
Moore, Claude C., Indianapolis
Murray, John S., Vincennes
Owen, Carl E., Richmond
Redmond, John P., Hartford City

Shartle, Clarence F., Stilesville
Sister M. Constantina, Michigan
City
States, Harold S., Wabash
Stengel, Ernest, Berne
Ullrich, Wilfrid J., Aurora
Zimmerman, Martin F. W., Fort
Wayne

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Roe, Charles P., Oskaloosa
Seydel, G. L., Davenport
Steuassy, Gerald H., Ft. Dodge
Stoner, Dorthea F., Perry
Watts, Loyd H., Odebolt
Witte, William A., Burlington

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Harkness, Charles A., Hays
Haskin, Ralph, Harper
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Norman, David J., Houma
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Hitchens, J. Orville, Holt
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Roman, Marie A., Grand Rapids
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Hunter, Wilbur A., St. Louis
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St. Joseph
Lohrman, Julius F., St. Louis
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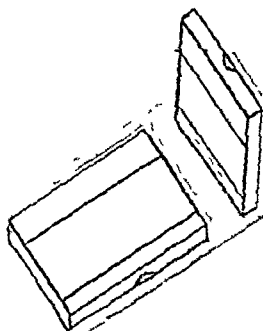
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Fox, Nicholas, Spalding
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Goldstein, Herman H., Union
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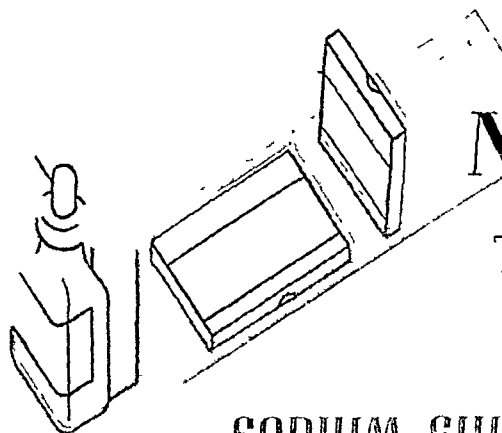
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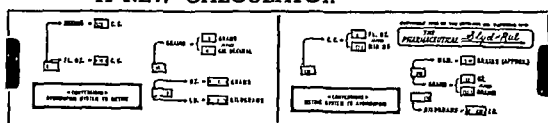
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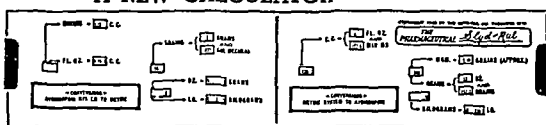
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AMERICAN PHARMACEUTICAL ASSOCIATION

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CONSECUTIVE NO. 21

Practical Pharmacy Edition

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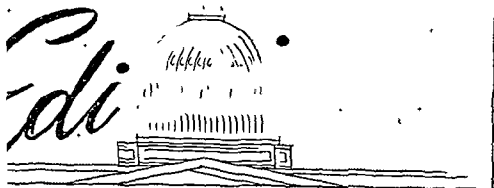
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NO VA ADVERTISING

THE announcement that 42 states and the District of Columbia now furnish prescriptions to war-disabled veterans under the Veterans Administration plan makes it clear that pharmacy will cooperate nationally to provide this needed service. That the government's obligation can be fulfilled through private practitioners is certainly of advantage. It also carries responsibilities.

One such responsibility, leading to some misunderstanding and abuse, is the iron-clad requirement that VA service must not be advertised to the public. To avoid misunderstandings, this point has been well emphasized in VA agreements and communications. Some pressure to change the ruling and instances of violations have nevertheless arisen. Any form of advertising can be expected to lead to cancellation of the pharmacist's participation agreement.

It has been a timeless tradition of the medical profession not to advertise professional services. Although this custom does not prevail in pharmacy, the VA medical department naturally finds it difficult to see why a professional service, such as pharmacists offer, requires promotion.

Aside from this view, Federal policy does not permit the use of United States government prestige in promoting a private enterprise. Identifying such service with the government implies government inspection, control and approval. At least so officials believe.

Sometimes it is best to leave well enough alone.

A logical objection may be raised, however: Not knowing which pharmacies may fill a VA-authorized prescription inconveniences the veteran. To avoid this, lists of participating pharmacies in each area will be supplied to physicians authorized to prescribe. Pharmacists, individually and as local organizations, also may rightfully place the names of participating pharmacies before their physicians. When there has been adequate lay publicity concerning state association members supplying VA service, a decal on the front of the pharmacy indicating association membership will be helpful.

If it still appears that the veteran is seriously inconvenienced, it might be well for the Veterans Administration to resurrect the now-shelved pro-

posal that a decal be authorized directly identifying sources of VA prescription service. We believe even government policy could justify this move, since it parallels the policy of identifying culture stations by boards of health. Meanwhile, we shall do well to abide by ethical tradition and the government's ruling on advertising.

CHANGE FOR THE BETTER

SOME time ago the Civil Service Commission announced that it had changed its mind. Just how much it had changed was indicated in the *Federal Register* last month. Said Commission President Mitchell: Government pharmacists may hereafter advance to the professional grade P4. Applicants must be licensed pharmacists holding a B.Sc. in pharmacy, or an equivalent degree.

Thus the door opens to development of pharmacy's service and status throughout government comparable to that achieved recently in the Veterans Administration. This is progress in seven-league boots considering the Commission's stand as late as last year. No formal professional training was then deemed necessary. It was a stand which precipitated the prolonged controversy between the Commission and the AMERICAN PHARMACEUTICAL ASSOCIATION.

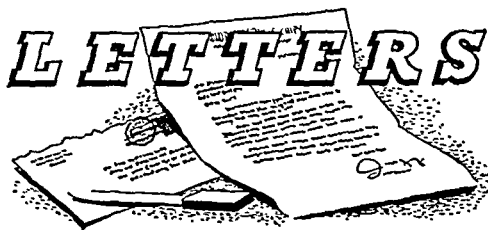
Minimum educational standards had kept salaries at a minimum for too long—at a level that could not possibly provide incentive for many high caliber men capable of providing the kind of pharmaceutical service needed. Not that many incumbent pharmacists, lacking present-day education, fail to serve capably. But with standards so low, and Civil Service procedures being what they are, there was little assurance that an agency would get the able men instead of those who had closed the door on new knowledge or were largely interested in getting on a list for retirement with pay.

Once modern educational requirements were adopted, it is natural that the newly defined policy should reveal increased opportunities for advanced professional ratings with salaries ranging from \$2644 up to \$5905 annually. On this basis Civil Service may expect to attract many more qualified pharmacists who can demonstrate—in places that count—the modern, progressive role of pharmacy in medical care. The Civil Service Commission has acted wisely, however regrettable the fact that building sound standards for future pharmaceutical service requires breaking with the past.

Sirs:

I have just read the series of articles on animal experimentation in the September issue of the *Practical Pharmacy Edition* of the JOURNAL. . . . Pharmacists are in a position, even more so than physicians, to play a major role in straightening out public thinking on this subject. I believe that these articles will go a long way toward enabling pharmacists to do this important missionary work. Medical College of Virginia Richmond, Va.

H. B. HAAG, M.D.



BACK HOME TO PHARMACY

Sirs:

I am now out of the Service and back home. Your diligence in seeing that I received my JOURNALS overseas has been deeply appreciated. . . .

Sincere congratulations on the excellent job A. Ph. A. is doing and has done. I hope I'll soon be doing what I can to further the interests of professional pharmacy.

Buffalo, N. Y.

RICHARD R. SHERWOOD

HE LIKES US

Sirs:

. . . I am finding the *Practical Pharmacy Edition* by long odds the most for my money of any professional reading I receive, and wish I might have had it years ago. With thanks,

Dresden, Ontario

E. HUGH WATSON

BOOKS ON BIOLOGICALS

Sirs:

Who publishes a good book on antitoxins, vaccines and other biologicals? . . .

Gulfport, Miss.

JONES BROS. DRUG. CO.

For pharmacists, Dr. Louis Gershenfeld's book on Bacteriology and Allied Subjects is one of the best for this purpose. It is available from the Mack Publishing Co., Easton, Pa. The A. M. A.'s New and Nonofficial Remedies, which we consider a "must" for the reference shelf, includes an informative chapter on serums and vaccines.—THE EDITOR

THE READER'S VIEWPOINT

Sirs:

I have read the editorial on "Penicillin Problems" [July], and it seems to me that pharmacists should realize the necessity of restricting this important drug to prescriptions without the necessity of

legislation. However, there are two sides to the matter. I think a great many pharmacists resent the fact that drugs such as penicillin troches are restricted items, when their manufacture fails to comply with state laws. . . .

As we know, a number of manufacturers do not have registered pharmacists to supervise "compounding" as required by most state laws. . . . Personally I am of the opinion that drugs should be restricted to drug stores and dangerous drugs to prescriptions, but I am equally interested in knowing that manufacturers are complying with the law by having registered pharmacists in charge of all compounding during manufacture. I believe the AMERICAN PHARMACEUTICAL ASSOCIATION could render a service to the people of the United States by making this an objective.

Chicago, Ill.

J. L. CRAWFORD

DENTAL AND COSMETIC FORMULAS

Sirs:

Have you any books containing formulas of dental and cosmetic preparations which are available to me? Irvington, N. J.

H. J. GERBER

Pharmaceutical Recipe Book III, an A. Ph. A. publication, includes special sections on cosmetic and dental formulas. Price: \$5; to active members, \$3.50. One of the most comprehensive books in the cosmetic field is *De Navarre's The Chemistry and Manufacture of Cosmetics* (D. Van Nostrand Co., New York, \$8). We believe you would also be interested in *Accepted Dental Remedies* (American Dental Association, Chicago, \$1.50). This volume contains a small section on dental formulas, but also includes much valuable information for the pharmacist interested in developing a more effective relationship with the dental profession.—THE EDITOR

FROM A NEW MEMBER

Sirs:

Thank you for your cordial invitation to join in the membership of the ASSOCIATION. I am enclosing \$7 which, I believe, takes care of the dues, etc. If not, please advise me.

Your last article on "Ophthalmic Solutions" is worth more than the money I am herewith forwarding.

Alexandria, La.

R. J. BIENVENU

This department is your pharmacy forum. Do you have something to say on current affairs in the profession. . . a question to be discussed? Write to the JOURNAL at 2115 Constitution Ave., N. W. Washington 7, D.

STRAIGHT



FROM HEADQUARTERS

by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

NEW FUNDAMENTAL PRINCIPLES

HOW far reaching health and medical care become in their national and international significance can best be grasped by stating the principles which the 61 nations constituting the World Health Organization adopted as "basic to the happiness, harmonious relations and security of all peoples." Here they are:

"Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

"The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social conditions.

"The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest cooperation of individuals and States.

"The achievement of any State in the promotion and protection of health is of value to all.

"Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger.

"Healthy development of the child is of basic importance; the ability to live harmoniously in a changing total environment is essential to such development.

"The extension to all peoples of the benefits of medical, psychological, and related knowledge is essential to the fullest attainment of health.

"Informed opinion and active cooperation on the part of the public are of the utmost importance in the improvement of the health of the people.

"Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures."

The United States of America was not only one of the participants in the Conference which formulated these principles, but Surgeon General Parran of the U. S. Public Health Service was the

permanent chairman of the Conference. Such international organizations set the tempo for national, state and local activity, and groups like the Allied Health Council of Alabama, the Conference of Allied Medical Professions of New Jersey and other similar groups will undoubtedly share in the planning and execution of measures calculated to translate the phraseology of the principles of good health and good medical care into the necessary action at the grass roots, so that lip service so freely given to proposals for the public welfare may be converted into evidence of healthier communities and happier individuals.

Fortunate indeed are the citizens of states in which the professional groups which are concerned with medical care have organized themselves into harmonious working bodies, capable of examining cooperatively the problems which confront all and taking counsel of one another as to the best methods of realizing the full benefit of the contribution which each group can make to the problem as a whole.

As pharmacists, we can take considerable pride in the knowledge that pharmaceutical associations have contributed so largely to the organization of groups engaged in supplying health and medical care services in various states.

Pharmacists are in the vanguard of the army of workers in the field of public health. Their establishments, strategically located throughout the length and breadth of this land, are the outposts for public health education. Alert and able health officers are aware of this fact and have taken full advantage of the possibility for spreading public health information to remote sections through pharmacies. We must not fail them.

STANDARDS MUST BE MAINTAINED

Our expanded educational program, our high standards of licensure, the continual effort of our colleges of pharmacy to provide refresher education, and the activity of national and state pharmaceutical associations to keep their members posted through their professional journals are evidence of the seriousness with which phar-

macists approach their growing contribution to health and medical care.

It would be nothing less than tragic for any state to now take a step backward by entertaining any proposition to lower its standards under the guise of meeting a temporary shortage of pharmacists somewhere. We struggled through the war years without sacrificing standards. Why let down the bars now when our colleges of pharmacy are filled to overflowing with earnest and eager men who have returned from the battle fronts? These men should be given every opportunity to come into the profession without being required to compete against those who have failed to meet standards which are today regarded as minimum for the character of work that needs to be performed. Returned veterans now pursuing pharmacy courses should make themselves heard in every state where lowering of Standards of registration is proposed. A move to lower standards of registration is a move to impair pharmaceutical service to the public.

Boards of pharmacy, pharmaceutical associations, pharmacy college faculties and student bodies must stand watch over our present laws to see that they are not tampered with except to bring standards up to minimum levels where that is necessary.

THE DRUG TRADE CONFERENCE

The National Drug Trade Conference gained its early reputation by bringing the various branches of the drug industry together in support of federal narcotic legislation at the time the Harrison anti-narcotic law was before Congress, about 1914. The Conference supported this legislation. By its "unanimous action" rule it has failed to take a stand on many very important problems affecting pharmacy. This rule provides that if any member of the Conference (three delegates from each of three national manufacturing and two national wholesale associations, the N. A. R. D., the A. Ph. A., the Association of Colleges and the Association of Boards of Pharmacy) chooses to declare a proposal controversial, no action can be taken on it by the Conference.

Hardly another important action was taken until a uniform State Food, Drug and Cosmetic bill was agreed upon. Next, unanimous action was forthcoming when the American Foundation for Pharmaceutical Education was organized. This year the Conference faces another important test. For years the A. Ph. A. and the N. A. R. D. together with the associations of colleges and

boards of pharmacy have advocated the restriction of the sale of drugs and medicines to establishments operated and supervised by pharmacists. The Proprietary Association has been the leading opponent of legislation seeking to accomplish this.

At the last annual meeting of the Conference a Committee on Uniform State Legislation was named, largely for the purpose of determining whether there could be brought about a meeting of minds on all state legislation affecting the profession of pharmacy and the drug industry. This would of course include restrictive legislation covering the sale of drugs and medicines. Just what any group in the drug industry would have to lose by agreeing to have all drug products dispensed in pharmacies under the supervision of trained pharmacists is not apparent. Certainly the public would be benefited by added protection to which it is entitled. The volume of sales would not be decreased. The products would reach the public in a more acceptable form and there would never be any difficulty in tracing the location of a product should anything go wrong in its production, as has happened. Every pharmacy is recorded either officially or unofficially with boards of pharmacy and responsibility for any dereliction in dispensing can be traced and punished. Who is holding back progress in drug distribution under conditions of control which are distinctly in the public interest and for what purpose is such control being denied?

THIRD JOINT MEETING

On November 23 the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION and the Executive Committee of the National Association of Retail Druggists will hold the third annual joint meeting of these two bodies in Chicago. Again they will discuss all of the worth-while resolutions and recommendations emanating from state pharmaceutical associations and other sources. This is a conference which has proven to be very useful for the purpose of exchanging ideas. The joint meeting or conference considers the text and the background of various proposals in order to avoid duplication of effort as well as to assure that no worthy proposal is overlooked. It is a remarkably effective clearing house which provides a forum for discussion at a high administrative level. American pharmacy is fortunate in having this forum available and those participating in this third annual conference are fully aware of their responsibilities.

SOME PHARMACEUTICAL APPLICATIONS*

by E. L. CATALINE

UNIVERSITY OF MICHIGAN, COLLEGE OF PHARMACY

THE importance of proper adjustment of the degree of acidity or alkalinity of pharmaceutical preparations becomes increasingly apparent. A relatively few years ago pharmacists seldom, if ever, changed the reaction of a solution or other preparation. It is now becoming much more common, not only in the large-scale manufacture of pharmaceuticals but also at the prescription counter.

Buffered collyria are frequently called for; and there is every reason to believe that, in the future, prescriptions for other types of preparations, such as lotions and ointments, will be found to require adjustment of acidity or alkalinity. Thus, the methods and procedures of such adjustments and the principles underlying them are constantly assuming greater importance for the pharmacist. In the discussion below, a few of the many applications of *pH* are presented to indicate present practices and probable trends.

Meaning of *pH*

The term *pH* is defined as "the negative logarithm of the concentration of the hydrogen ion." The hydrogen-ion concentration may be expressed in a number of ways most of which are rather cumbersome. For example, it has been found that in pure distilled water there is about seven ten-millionths of a gram of hydrogen ions per liter. This may be expressed as a decimal fraction, 0.0000007 Gm. per L., or exponentially, 1×10^{-7} Gm. per L. However, in practice these forms are not always convenient and a simpler means of expression is certainly desirable.

The term *pH*, suggested by Sørensen,¹ and defined above, has come into very common use because it does have simplicity to recommend it. In the example of the distilled water, it was pointed out that the concentration of hydrogen

ions could be stated as 1×10^{-7} Gm. per L. In this expression, it is seen that the logarithm is -7 . Thus, the *pH*, being the negative logarithm, would be minus -7 , or $+7$. This is obviously a more simple form of expressing the hydrogen-ion concentration than are the decimal fraction or exponential forms.

In a solution which contains 1×10^{-2} Gm. of hydrogen ions per liter, the *pH* is 2, while a solution containing 1×10^{-10} Gm. of hydrogen ions per liter has a *pH* of 10. On this basis there has been constructed a *pH* "scale" from 1 to 14 which is widely used to express conveniently the concentration of hydrogen or hydroxyl ions. A *pH* of 7 represents neutrality. When the *pH* is less than 7 an acid reaction is signified, and an alkaline reaction is indicated by a *pH* above 7.

It is important to understand that although it is commonly said that a solution having a *pH* of 2, for example, is "very strongly acid," and one with a *pH* of 13 is "very strongly alkaline," such solutions are in reality very dilute.

For instance, if one dilutes 1 cc. of hydrochloric acid U. S. P. to 1000 cc. with distilled water, the *pH* of the resulting solution will be about 2 and the percentage concentration will be 0.0365%. If 1 cc. of hydrochloric acid U. S. P. is diluted with distilled water to 1,000,000 cc. the *pH* of the solution produced will be 5, the concentration being 0.0000365%. Thus, it is clear that in this range we are dealing with very dilute solutions. But as will be seen below, small changes, such as from *pH* 7 to *pH* 3, are of decided importance in connection with the stability, therapeutic efficacy and other characteristics of many preparations.

pH and Stability

One of the unfortunate characteristics of many pharmaceutical preparations is their relative instability. Precipitation, loss of activity, change of color, and other changes are often

* Based on an address delivered before the Northwestern Ohio Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION.

characteristic of some preparations and occur at times in others. In many instances it has been found that these evidences of instability are due to the development, in one way or another, of an unfavorable pH either during manufacture or subsequently.

In a number of cases it has been found that proper adjustment of the pH by adding appropriate substances overcomes the difficulty in part or wholly. A few examples will illustrate this.

Tincture of aconite N. F., prepared by using the usual hydro-alcoholic menstruum, undergoes deterioration rather rapidly, losing its activity to a considerable extent. This loss of activity is associated with the hydrolysis of the alkaloid aconitine. After it was shown that the hydrolysis takes place rapidly in alkaline solution but very slowly in acid solution,² Swanson^{3,4} found that the addition of a small amount of acid to the menstruum or to the fresh percolate would so stabilize the tincture that its loss of activity was practically negligible. In line with this finding, the N. F. VII directs that hydrochloric acid be added to the percolate until the pH is 3 ± 0.2 .⁵ Tinctures so prepared are exceedingly stable under the usual conditions of storage and use.

In a similar way, it has been shown that the addition of tartaric acid to tincture of digitalis until the pH is 5.4 will materially decrease the deterioration commonly seen in this preparation.^{6,7} At higher pH there is considerable loss of activity and the higher the pH , the greater the loss.

Other examples which may be cited include elixir of three bromides N. F. in which the color change that often occurs can be minimized by adjusting the pH of the preparation to 4.2,⁸ and solutions of thiamine chloride which are most stable when the pH lies between 3.5 and 4.5. Not only are solutions of thiamine chloride more resistant to atmospheric oxidative changes in the pH range 3.5–4.5, but they may be sterilized at 120° C. for 20 minutes with very little decomposition when so adjusted.

pH and Therapeutic Efficacy

Besides being of assistance in stabilizing preparations, the adjustment of pH to the proper value is often followed by increased therapeutic activity. This is particularly true of antiseptics with which some rather remarkable results have been obtained. Several years ago, Degering and his co-workers⁹ found that the antiseptic and bactericidal activity of a number of antiseptics was strikingly increased when the pH of their solutions was properly adjusted.

In Table I the results obtained with some typi-

cal antiseptic substances are shown. It is seen that as the pH of solutions of these substances is lowered from 7, little change is apparent until pH 4 or 3 is reached. Then there is a remarkable increase in activity.

TABLE I.—BACTERICIDAL ACTION OF ANTISEPTICS

pH	HIGHEST KILLING DILUTION (<i>Staph. aureus</i>)
Benzoic Acid	
8	1:5
7	1:10
6	1:10
5	1:20
4	1:250
3.5	1:900
Phenylmercuric Nitrate	
7	1:10,000
6	1:20,000
5	1:10,000
4	1:10,000
3	1:100,000
Hexylresorcinol	
7	1:3,000
6	1:3,000
5	1:5,000
4	1:12,500
3	1:100,000
Merthiolate	
7	1:10,000
6	1:5,000
5	1:10,000
4	1:75,000
3	1:75,000

In some of the instances cited, a change from pH 4 to 3 is accompanied by a nearly tenfold increase in activity and the same is true with many other substances. In a few instances—sulfonmerthiolate, for example—the antiseptic activity was greater in alkaline medium (pH greater than 7) than in acid medium (pH less than 7), but such cases were the exception.

An excellent illustration of the effect of pH on antiseptic activity is found in the case of mandelic acid. This urinary antiseptic is not significantly bactericidal in alkaline urine, nor in acid urine when the pH is greater than 5.5. When the pH is below 5.5 mandelic acid is a very effective bactericide, and in clinical practice the attempt is made to keep the pH of the urine below 5.5.¹⁰

The fact that methenamine liberates formaldehyde, and therefore acts as a urinary antiseptic, only in a strongly acid medium (pH below 5.0) is well known. In this instance, as in the case of mandelic acid, it is common practice to administer an acidifying salt such as ammonium chloride or sodium biphosphate to render the urine acid.

Thus far, only a few papers have appeared

which report results of investigations into the possible importance of the *pH* adjustment of lotions and ointments, but they give reason to believe that rather important developments will be forthcoming in the near future.

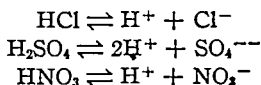
According to Harry¹¹ it is quite possible that external preparations are most efficacious when they do not materially interfere with the functions of the "acid mantle" of the skin. Even though these functions are not at all understood at the present time, it is thought that the acid mantle may possess antibacterial activity of some sort which protects the individual against the innumerable microorganisms which normally inhabit the skin.

On this basis, the use of external preparations that possess a *pH* the same as that of the normal skin would seem to be indicated. On the other hand, it is possible that ointments and lotions of definite *pH*, differing from that of the acid mantle, may be of value in restoring the normal *pH* of the skin when pathologic conditions may have altered it from the normal (which ranges from *pH* 4.2 to 5.6, averaging from 5.3 to 5.6). Harry has suggested a number of formulas for creams of definite *pH* that may serve as starting points in the development of this field.*

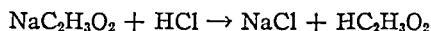
Buffering

So far the examples mentioned have involved only the addition of a substance such as an acid or alkali until the proper *pH* has been reached. No provision has been made for maintaining the *pH* at the desired point in the event that additional acid or alkali might find its way into the solution. Yet, in many instances it is very desirable that such provision be made. It is possible to prevent the *pH* from changing materially by using what are known as buffer mixtures.

To understand the action of buffer mixtures, it is first necessary to recall the difference between "strong" and "weak" acids and alkalies. By a strong acid or alkali is meant one which, upon being dissolved, undergoes electrolytic dissociation to a considerable extent. In such solutions one finds large concentrations of ions. Examples of strong acids are hydrochloric, sulfuric and nitric which in solution are almost completely dissociated into ions, as indicated by the following equations.

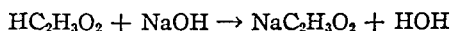


When one of these acids is added to distilled water the concentration of hydrogen ions will be greatly increased and the solution will be highly acidic. If, on the other hand, it were possible to immobilize these hydrogen ions in some way the *pH* would not be materially affected. By first dissolving the salt of a weak acid in the water this may be accomplished. Taking sodium acetate as an example of a salt of a weak acid, the reaction upon addition of a strong acid (hydrochloric) would be:



The acetic acid is only very slightly ionized. Thus, most of the hydrogen exists in the form of nearly un-ionized acetic acid and the concentration of hydrogen ions is very low; in other words, addition of the strong hydrochloric acid to the solution of sodium acetate has not materially changed the *pH*.

In the same way, the rise in concentration of hydroxyl ions which would result when a strong base is added may be minimized by having a weak acid present. The reaction in this case would be:



In this case the hydroxyl ions are combined as water which is, of course, neutral.

If a pair of substances such as acetic acid and sodium acetate are combined in solution they form a buffer mixture. Such a mixture will protect a solution or other preparation in which it may be incorporated against appreciable change in *pH* upon the addition of strong acids or alkalies. A number of such mixtures are available for use by the pharmacist in protecting various types of preparations against changes in *pH*.

Buffered Collyria

Perhaps the greatest progress in buffering extemporaneous pharmaceutical preparations has occurred in the field of ophthalmic solutions. It has been found that much of the irritation resulting from application of solutions to the eye can be eliminated if their *pH* is properly adjusted. In fact, it has been shown that in some instances buffered solutions alone are capable of acting as therapeutic agents.

The best known mixture for buffering collyria is that developed by Gifford and Smith.¹² As a result of their studies, these ophthalmologists found that the following mixtures can be easily

* Mr. Harry's work has been reviewed in *THIS JOURNAL*, 3, 340, (1942).

employed for the extemporaneous preparation of collyria of rather definite pH.

GIFFORD AND SMITH BUFFER MIXTURE

SOLUTION NO. 1

Boric acid, anhydrous.....	12.4
Potassium chloride, anhydrous....	7.4
Distilled water.....	1000

SOLUTION NO. 2

Sodium Carbonate, anhydrous....	21.2
Distilled water.....	1000

The quantities of each solution required for the preparation of 1000 cc. of a buffer mixture of definite pH are shown in Table II.

TABLE II.—GIFFORD AND SMITH BUFFER MIXTURES

pH	cc. No. 1	cc. No. 2
5	0	1000
6	1.7	998.3
6.2	3.3	996.7
6.75	8.3	991.7
7.2	33.3	966.7
7.6	50	950
7.8	66.7	933.3
8.2	100	900
8.4	133.3	866.7
9.2	266.7	733.3

Since the normal secretions of the eye have a pH which averages about 7.2, it would seem best to adjust the pH of ophthalmic solutions to this value. However, for at least two reasons it is not always feasible to buffer such solutions to the same pH as that of the eye secretions.

First, the inherent characteristics of the medication employed may make it impossible to buffer to pH 7.2. For example, if a solution of zinc chloride is buffered to pH 7.2, zinc hydroxide precipitates. Likewise, most alkaloids are soluble in acid solution but are insoluble in alkaline solution. Therefore, these substances, and many others, must be dispensed in solutions whose pH is materially different from that of the lachrymal fluid.

Secondly, as pointed out above, the therapeutic efficacy of many substances is optimal at definite pH values and these are often considerably different from 7.2. Recognizing these facts, Gifford and Smith determined the optimum pH for a number of substances, as shown in Table III.

In addition, Gifford and Smith found that the alkaline buffer mixture of pH 9 is useful in the treatment of vernal conjunctivitis and certain

cases of chronic conjunctivitis. Moreover, it has been shown that there are other important specific effects of pH.¹³ For example, solutions which are to be employed in the treatment of pneumococcic and gonococcic infections of the eye are most efficacious when their pH is less than 7, while streptococcic infections are more sensitive to solutions having a pH greater than 7.

TABLE III.—OPTIMUM pH FOR THERAPEUTIC EFFICACY

MEDICAMENTS	pH
Butyn and Phenacaine.....	5
Zinc salts, epinephrine, cocaine.....	6
Atropine, physostigmine, pilocarpine, hom-atropine.....	7.6
Soluble fluorescein.....	9

A further use of the Gifford and Smith buffers has been found in connection with the so-called "contact lenses." Before application to the eye these lenses must be filled with liquid. Excellent results have been obtained by employing the proper buffer mixture for this purpose, irritation being reduced to a minimum. No one mixture can be said to be optimal since the eyes of different persons differ in their response. It is necessary to determine by trial, which mixture of definite pH is the most satisfactory in each case.

In a recent publication, Arrigoni and Tozer¹⁴ have described the use of mixtures of monobasic potassium phosphate (KH_2PO_4) and dibasic sodium phosphate (Na_2HPO_4) or of sodium acetate and boric acid in the preparation of a number of buffered, isotonic and preserved collyria which give promise of being extremely useful to the practicing pharmacist.

Buffered Collunaria

Solutions which are to be instilled into the nose also should possess a pH near that of the nasal secretions, namely 7.2. The nose, however, does not appear to be so sensitive as the eye to slight variations in pH. Tozer and Arrigoni¹⁵ found that preparations which varied from pH 6.0 to 7.6 were well borne and produced minimum irritation. In their experiments, mixtures of monobasic potassium phosphate and dibasic sodium phosphate were used as buffers.

The importance of the adjustment of pH in solutions to be used nasally is emphasized by the work of Fabricant,¹⁶ who has shown that solu-

tions which are slightly acid are more effective in the treatment of colds and sinus infections.

Buffered Ointments

Mention has been made previously of the possible importance of the adjustment of the pH of lotions and ointments. While this field has not been extensively developed, there is reason to believe that important advances will soon be seen. Harry¹¹ has speculated on the desirability of buffering ointments and has published a number of formulas for buffered ointments, utilizing mixtures of solutions of sodium phosphate and citric acid. LeMar and White¹⁷ have shown that "certain buffered ointments tested exhibited greater germicidal action than unbuffered ointments of similar hydrogen-ion concentration."

In studies on the adjustment of non-aqueous systems, however, care must be taken in expressing pH meter readings as pH . Due to a number of factors, readings may vary considerably from a true representation of the hydrogen-ion concentration.

In a brief discussion of this sort, it is patently impossible to consider all of the applications of pH . However, some others might be mentioned to indicate the range of possibilities.

Studies have shown that the stability of emulsions depends in no small measure upon the apparent pH of the preparation. This is due to the fact that the charge on the near-colloidal droplets of the emulsions may be altered if the pH differs materially from the optimum value. It has been found, for instance, that oil-in-water emulsions promoted by acacia are most stable when the pH lies in the range 4.1–4.3 while tragacanth-promoted emulsions are most stable at a pH of about 2.5.¹⁸

By means of a very efficient buffer system the pH of the blood is maintained at 7.35. Whenever it is feasible, solutions which are to be injected intravenously are buffered to about pH 7.35 since the injection of such a solution puts relatively little strain on the buffer system of the blood. It should be pointed out, however, that except when large amounts of intravenous solutions are injected, the blood's buffers can usually take care of the acid or alkali contained in injections.

The sterilization of a number of substances in solution is accompanied by considerable breakdown unless the solutions are properly buffered to the appropriate pH value. For example, cocaine hydrochloride solutions must be adjusted to pH 5 or less, if excessive hydrolysis is to be avoided when the solution is subjected to the heat necessary for sterilization.

When it is necessary to adjust the pH of a prescription by the simple addition of acid or alkali, the following method, described by Wyss,¹⁹ may be conveniently used.

Practical Adjustment of pH

"*STEP I.* The prescription ingredients are combined and the preparation is brought to within one-half to one fluid ounce of the desired volume. Using an indicator paper of wide pH range,* the approximate pH value of the mixture is determined by moistening the paper with a drop of the preparation and comparing the resulting color with the standards provided. This step serves to indicate whether acid or alkali will be needed for the adjustment and to show approximately how far the pH of the mixture is from the desired range.

"*STEP II.* Small pieces of indicator paper especially suitable for showing differences of pH over a narrow range of pH ,† then are placed on a pill tile or other convenient surface. Let it be assumed, for example, that the desired pH is to be approximately 4, with an upper limit of 5 and a lower limit of 3. A drop of each of three standard buffer solutions is placed on individual pieces of the indicator paper—one buffer solution representing the upper limit of the desired pH range (pH 5), one the lower limit (pH 3), and one the median value (pH 4). The colors thus produced will serve as guides in adjusting the pH of the finished prescription.

"*STEP III.* Dilute hydrochloric acid or sodium hydroxide of known strength is added in measured small amounts to exactly 10 cc. of the prescribed mixture as the case requires. Each addition is followed by thorough mixing and testing on fresh portions of indicator paper until the color obtained shows the pH of the sample to compare favorably with that produced by the specified standard buffer solution (pH 4). From the amount of acid (or alkali) required for the 10-cc. portion of the prescribed mixture, the volume needed for the remainder of the prescription may be calculated.

"*STEP IV.* The calculated volume of acid (or alkali) is combined with the rest of the mixture, the above portion which was subjected to the preliminary adjustment is added, and sufficient vehicle is used to yield the final volume. The completed preparation is mixed thoroughly and subjected to a final check of the pH value;

* A number of such papers are now available. Examples are the "pHydron" paper (Central Scientific Co., Chicago) and "Alkacid Test Ribbon" (Fisher Scientific Co., Pittsburgh, Pa.).—THE EDITOR

† Available from such firms as Precision Laboratories, Rosslyn, O.—THE EDITOR

if satisfactory, the product is packaged properly and labeled, with complete instructions to the patient concerning proper conditions of storage and use."

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USE OF SYRINGE TO MEASURE TYROTHRIN

by WILLIAM P. O'BRIEN

RETAIL PHARMACIST, NEW ORLEANS, LA.

USE of a hypodermic syringe for measuring both small and large quantities of tyrothrin concentrate in making up solutions is ideal for several reasons. It simplifies the production of sterile solutions of this antibiotic, is economical, and permits a high degree of accuracy.

A hypodermic syringe of any size can be used. However, for very small quantities, a 1, 1.5 or 2 cc. syringe is most suitable.

For topical applications or for instillation into one of the body cavities, the pharmacist can easily prepare sterile solutions within a reasonable time. As an illustration, the preparation of a liter of tyrothrin solution may be described as follows.

Materials and apparatus necessary:

- 1—20-cc. package of tyrothrin concentrate, 2.5%.
- 1—1000-cc. rubber-capped flask of sterile distilled water.
- 1—20-cc. syringe with a small gauge hypodermic needle.

Procedure—Sterilize the syringe and needle by boiling in a 1% phenol solution for thirty minutes or by autoclaving. Attach the needle to the syringe with the aid of forceps or tweezers and push the piston all the way in, to drive out any water.

Wipe off the rubber caps of the tyrothrin vial and distilled water flask with 70% alcohol or antiseptic solution before inserting the needle. Insert needle into the cap of distilled water flask and withdraw 20 cc. of water. This is discarded after the syringe is withdrawn. Then insert needle into the cap of the tyrothrin vial and withdraw 20 cc. Remove needle and insert into

distilled water flask and empty contents into the water. Before withdrawing needle invert flask and draw 15 to 20 cc. of the solution into syringe and return to flask by emptying the syringe, thus rinsing out residual tyrothrin. Shake the flask of solution to mix thoroughly.

Often the pharmacist is called upon to prepare solutions that require very small quantities of tyrothrin. Such solutions are frequently prescribed by eye and ear specialists and call for only 0.15 to 0.3 cc. of tyrothrin concentrate, 2.5%. The following prescription is a familiar example.

R

Sol. Tyrothrin 200 micrograms per cc.
Disp. 15 cc.

To fill the above prescription 0.12 cc. of tyrothrin concentrate is needed. This amount can be measured rather accurately with a 1 cc. B-D Yale syringe graduated in 0.1 cc. (The 0.02 cc. is approximated as closely as possible.) The syringe should be rinsed in the finished solution by drawing in and expelling some of the solution several times. In this manner all the tyrothrin measured is used.

The hypodermic syringe permits greater accuracy of measurement than graduates permit. Also, by use of the hypodermic syringe, the tyrothrin can be withdrawn from a 10- or 20-cc. stock vial without any waste and then added to the measured water in a sterile container. When a hypodermic syringe is employed, the tyrothrin always will be added to the water, and thus the mistake of adding the water to the tyrothrin cannot be made. To produce a clear solution the tyrothrin concentrate must be added to the water.

PROTEIN IN MODERN THERAPY

by L. EARLE ARNOW*

ALL living cells are dependent for their very existence on proteins. The average human body is about 66% water and is almost 20% protein. If we exclude the water, this means that about 56% of the dry weight of the body is protein.

Such familiar things as hair, skin, eye coloring, wool, silk and leather owe their distinctive properties to the proteins present in them. Even the color in the cheeks of a blushing maiden (assuming one can be found these days) is due to hemoglobin, the red protein of the blood that carries oxygen to the tissues.

Protein molecules are huge as compared with other common organic molecules. It may be recalled that the molecular weight of water is approximately 18; of ordinary cane sugar, about 300; and of an average fat molecule, about 1000. In contrast to this, the molecular weights of proteins range from about 3000 to something in the neighborhood of 50,000,000.

It is not surprising, therefore, that the detailed structure of protein molecules is not known with certainty. We do know, however, that each of these huge molecules can be broken down by relatively simple procedures into a mixture of smaller organic molecules known as amino acids. The name "amino acid" indicates that these simpler compounds contain both acid (COOH) and amino (NH_2) groups. Much study has convinced us that protein molecules are formed when a number of these amino acids combine chemically together with the elimination of water. When this water is added chemically to the protein molecule, as occurs, for example, during digestion, the amino acids are formed again.

Most of the common proteins contain 20 to 22 different kinds of amino acids chemically combined together. In most cases several amino acids of one kind will be present at different locations in the protein structure. One of the proteins circulating in blood plasma, for example, probably contains between 300 and 400 of these amino acid molecules in each protein molecule.

All of these amino acids contain carbon, hydrogen, oxygen and nitrogen. Some of them contain sulfur, and some of them are combined with phosphoric acid when they are present in proteins. Since in contrast to other common substances,

INDICATIONS FOR PROTEIN DIETARY SUPPLEMENTS ARE VIEWED IN THEIR RELATION TO METABOLIC FUNCTION . . . NATIVE PROTEIN SUITABLE IN MOST CASES, WHILE AMINO ACID MIXTURES SUPPLY NEED FOR SOLUBLE FORMS

such as sugars and fats, all proteins contain nitrogen, it is customary to estimate the content of protein in a tissue or medicinal preparation by determining the amount of nitrogen present. If the amount of nitrogen as determined by chemical analysis is multiplied by the factor 6.25, the resulting figure is a fairly accurate measure of the amount of protein present. It will be noted that this calculation involves the assumption that proteins contain about 16% nitrogen.

Essential Amino Acids

In extensive experiments involving the use of laboratory animals, it has been found that the animal body can synthesize or manufacture in its tissues certain amino acids. This can be done, however, only if a certain group of amino acids known as essential amino acids is present in the diet.

We may define essential amino acids as amino acids that either cannot be made by animal tissues or that cannot be made rapidly enough to support normal growth and function. If these essential amino acids are present in the diet in adequate quantities, the other amino acids can be made in the tissues.

It may occur to the reader that the word "essential" is perhaps not a wise choice, since our own tissue proteins contain most, if not all, of the naturally occurring amino acids, and since so far as we know each of these is necessary for normal body structure. The word "essential" implies only that certain amino acids cannot under any circumstances be made in tissues in sufficient quantities for normal functioning and consequently must be present in the diet.

Protein Digestion

Since protein molecules are very large, they are unable to diffuse across the lining of the intestinal tract except in very minute quantities,

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and hence the food protein taken by mouth cannot gain entrance into the body tissues unless certain chemical reactions known collectively as digestion take place. Gastric juice contains an enzyme known as pepsin. In the presence of this enzyme the huge protein molecules are changed into smaller molecules known as proteoses and peptones.

By likening the amino acid residues present in protein molecules to beads strung together on a string, we can imagine that in the presence of pepsin the long string of beads is chopped into several smaller strings corresponding to proteoses and peptones. After these proteoses and peptones leave the stomach, they come in contact with pancreatic juice, which the pancreas empties into the small intestine. This fluid contains a number of enzymes concerned with protein digestion. The most familiar of these is trypsin. In the presence of these enzymes the proteoses and peptones become smaller molecules known as peptides, and eventually become amino acids.

In keeping with the analogy drawn above, the strings of beads successively become shortened until in many cases only single beads (amino acids) remain. The soluble peptides and amino acids formed as a result of digestion diffuse across the membrane lining the intestinal tract and gain entrance into the blood stream, which carries them to the various body tissues.

Protein Metabolism

For our purposes we may define metabolism as the sum total of all the chemical reactions that take place in the body tissues. Some of these reactions may be compared with the burning of coal, in which energy is produced as the coal is oxidized. Physiologically, we know this type of reaction as catabolism (i.e., one in which the food molecule undergoes destruction with the production of energy).

Another kind of metabolic reaction involves the building up of new body tissue, the formation of essential substances required for the functioning of the body tissues, and the deposition of reserve material in various places in the body to be drawn on in case of need. We commonly refer to this kind of metabolism as anabolism.

The anabolism of proteins in the body involves the synthesis of all tissues, formation of hemoglobin, the synthesis of plasma proteins, body pigments, enzymes, antibodies and many of the hormones. Catabolism of proteins is a wasteful process, since it results in destruction of the protein with the formation of energy and ends in the

excretion of nitrogen (chiefly in the form of urea) in the urine.

It is true that energy processes are essential for life, but sufficient energy can be derived from the oxidation of fats and carbohydrates. The prime aim of protein therapy is to supply protein for anabolic processes, and it is necessary to supply also sufficient other food to take care of the energy needs of the body in order to minimize the wasting of protein in catabolic processes.

Nitrogen Balance

An adult receiving a sufficient amount of protein in his diet eliminates in the urine and feces the same amount of nitrogen (which is, of course, derived from protein) as he ingests in the diet. In other words, if we ingest more protein than is required for anabolic processes, the extra protein will be catabolized, and its nitrogen will be eliminated from the body. Such an individual, who is excreting exactly the same amount of nitrogen as he ingests, is in "nitrogen equilibrium" or "nitrogen balance."

When, however, there is a need for the addition of extra amounts of protein to the tissues, the amount of protein nitrogen ingested will be greater than the amount of nitrogen lost from the body, provided, of course, that sufficient other food to take care of the body's energy requirements also is ingested, and assuming that the protein ingested is of good nutritional quality. When this occurs, the individual is in "positive nitrogen balance."

Positive nitrogen balance will be found, for example, in children, since they are growing and hence are adding extra protein to their tissues every day. It will be found also in persons convalescing from an illness if their diets contain sufficient protein and other foods. It will be pointed out later that protein loss from the body is excessive during any kind of illness or injury, and this lost protein must be restored.

Under circumstances where the intake of protein nitrogen is less than the loss of nitrogen from the body, the individual is in "negative nitrogen balance." This situation obviously will be found in starving individuals or in individuals who are unable for one reason or another to absorb food protein. Recent studies have indicated that it is found also following surgical or accidental tissue damage, since, for reasons as yet not completely understood, injury causes an excessive catabolism of body protein. It is the aim of protein therapy to restore a negative nitrogen balance first to a positive one and then finally, as the protein stores

of the body are replenished, to nitrogen equilibrium.

Results of Negative Nitrogen Balance

Abnormalities that accompany negative nitrogen balance include anemia, tissue oxygen deficiency, loss of weight, retarded wound healing, retarded convalescence, decreased resistance to infection (since antibodies are proteins), and tissue edema.

Edema, characterized by abnormal collections of fluid in tissues, underlies many protein deficiency states. It therefore may be worth while to discuss briefly the way in which the proteins present in blood plasma assist in regulating the exchange of fluid from the blood stream to the tissues.

The large arteries leaving the heart divide into smaller and smaller branches until finally the arterioles are formed. These small arterioles finally join the thin-walled tubular capillaries. The other end of each capillary (which is of the order of 0.5 mm. long) joins a venule. Venules combine together to form the veins that carry blood back to the heart. All exchange of fluid, foods and waste products between the blood and the tissues must occur across the capillary membrane.

Plasma contains about 7% protein. On the other hand the tissue fluids surrounding the capillary membrane contain almost no protein. It must be kept in mind that the capillary membrane ordinarily will not permit the passage of protein molecules across it. Under these circumstances

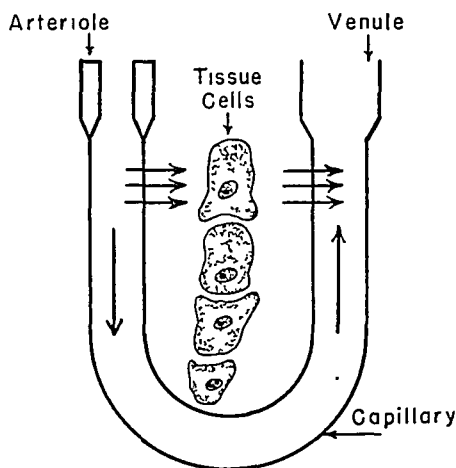
an osmotic pressure difference between the tissue fluid and the blood plasma is set up, and water attempts to flow from the tissues into the capillary. The magnitude of this pressure is approximately 22 mm. of mercury.

Now there is also a force tending to move fluid from the capillary into the tissues. This force is the blood pressure. At the arterial end of the capillary the blood pressure is approximately 35 mm. of mercury. Hence, at the arterial end fluid, carrying with it various food materials, will pass out of the capillary into the tissues, since the blood pressure (the driving force outward) is greater than the protein osmotic pressure (the driving force inward).

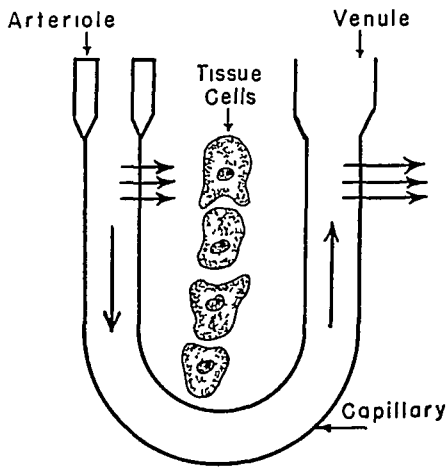
The blood pressure on the venous side of the capillary amounts to about 12 mm. of mercury. Therefore, fluid containing waste products from the cells will flow back into the capillary under normal circumstances, since in this case the blood pressure is less than the protein osmotic pressure.

The end result of this beautifully balanced mechanism is that fluid and food products leave the capillary at the arterial end, and a comparable amount of fluid containing waste products reenters it at the venous end. (*See diagram below.*)

Now suppose that the level of protein in the plasma is much lower than normal, either because protein has been lost from the body in excessive amounts or because protein intake has been curtailed for a long period of time. Under these circumstances, since the amount of protein present is reduced, it follows that the magnitude of the protein osmotic pressure also will be reduced-



NORMAL FLUID MOVEMENT



FLUID MOVEMENT IN EDEMA

As an example, suppose that this protein osmotic pressure is only 10 mm. of mercury instead of the normal 22 mm. of mercury. Under these circumstances it is apparent that fluid will leave the capillary not only at the arterial end but also at the venous end, since the blood pressure everywhere in the capillary will be greater than the protein osmotic pressure. (*See diagram.*) This, of course, will result in the accumulation of excessive fluid in the tissues, and will lead to edema.

Edema increases pressure in the tissues and interferes with the return of waste products to the blood. In addition to the mechanical effects of the increased pressure, smaller blood vessels are "squeezed" and the blood supply to the tissues is reduced. All of these factors tend to cause tissue injury and to interfere with normal processes of healing and tissue regeneration.

Causes of Negative Nitrogen Balance

DECREASED PROTEIN INTAKE.—A decreased protein intake may occur for a number of reasons. These reasons include inability of the individual to obtain sufficient protein, loss of appetite because of disease and old age, bad eating habits, and pathologic difficulties in the gastrointestinal tract that interfere with the ingestion of food. In addition, special diets used in the treatment of such conditions as diabetes mellitus, allergy, and gastric ulcer may contain insufficient protein. Diets used for the purpose of reducing weight also may be excessively low in protein. Occasionally faddists do not receive sufficient protein in the diets they choose to eat.

Special mention should be made of the importance of an adequate protein intake for older persons. At the time of birth the basal metabolic rate (rate at which food is metabolized under conditions of rest) is high (about 55 calories per square meter per hour) as compared with other periods of life. This basal metabolic rate gradually declines, and in old age may be only about 25 calories per square meter per hour. As someone has said, "We start to die as soon as we are born."

The protein requirement also is high in infancy and childhood, but as soon as growth is ended it becomes relatively constant. In other words, an older person requires just as much protein as a healthy young adult. On the other hand, the energy requirement of the older person is considerably less than that of the young adult. Hence it will be obvious that there is a tendency for older persons to ingest less food than they ingested when they were younger, and, in fact, unless this is done they must of necessity become obese. The difficulty is that if they are to main-

tain perfectly normal health, they must ingest the same amount of protein as the younger individual even though the intake of food is smaller. It will be apparent, then, that the diet of older people should be regulated much more carefully than has been the custom in the past, and should by some means or other be supplemented with additional protein.

INCREASED PROTEIN CATABOLISM.

—The rate of protein breakdown in the tissues obviously is accelerated if there is an inadequate intake of non-protein foods. This will occur because the body will of necessity have to use a part of its protein for energy purposes if sufficient energy-yielding carbohydrates and fats are not ingested.

It has been found recently that for reasons as yet not understood protein catabolism is accelerated markedly following tissue trauma such as injuries, burns or surgery. The marked loss of protein following trauma is indicated in the table, page 494, which lists some of the results obtained by Dr. Frank Co Tui of New York University.

Obviously this type of patient will require a considerable amount of excess protein in the diet for prompt and complete recovery.

Hyperthyroidism is characterized by an increased rate of metabolism in the body, and, unless considerable excess food is ingested, will lead to a loss of tissue protein.

The rate at which chemical reactions take place in the body is increased about 7% for each degree Fahrenheit rise in temperature. For example, a patient who has a temperature of 103.6° F. has a rate of metabolism about 35% greater than normal. Since patients with fever ordinarily do not have good appetites, this means that excessive tissue destruction will take place to supply this increased energy, with a resultant loss in tissue protein.

INCREASED PROTEIN LOSS.—Hemorrhage is an obvious cause of protein loss, since each 100 cc. of whole blood contains about 20 Gm. of protein. Ordinarily protein does not occur as such in the urine. However, in many kidney diseases protein "leaks" from the blood into the urine and this is lost from the body. Certain lesions such as burns involve a loss of considerable quantities of protein-containing fluid which seeps from the injured area. Some examples of this loss are given in the table.

Pregnancy represents a normal condition in which there is a loss of protein from the mother's body. This protein, of course, is furnished to the growing embryo, is present in the fluid surround-

NITROGEN LOSS IN DIFFERENT EXUDATIVE SURGICAL CONDITIONS*

DIAGNOSIS	TOTAL		
	NITROGEN LOST IN 24 HOURS, GM.	EQUIVALENT IN PROTEIN, GM.	EQUIVALENT IN PLASMA, CC.†
Burns, second and third degree	9.07	56.69	945
Burns, second and third degree	7.65	47.81	798
Burns, second and third degree	1.38	8.63	164
Avulsion of perineum and back	6.37	39.81	664
Radical breast	4.20	26.25	445
Abdomino-perineal resection (cancer of rectum)	6.22	38.87	644
Abdomino-perineal resection (cancer of rectum—infected)	6.97	43.56	707
Lung abscess—Pyothorax	9.57	59.81	997

* Adapted from Co Tui, F., et al.: *Annals of Surgery*, 121: 225(Feb.), 1945.

† The assumption is made that the protein content of plasma is 6 Gm. per 100 cc.

ing the embryo, and is required for the formation of the placenta and the enlarged uterus. In addition, the blood volume of the pregnant woman is increased, and this requires additional protein. It has been estimated that about 70 Gm. of protein should be ingested by the average normal adult per day. In pregnancy this should be increased to at least 125 Gm. daily. Lactation also causes a loss of protein from the mother's body. Even for very young infants this may amount to 10 to 20 Gm. of protein daily. Since the protein mixture in human milk has a very special amino acid composition that will not be matched exactly by food protein, it is believed to be necessary for the mother to ingest at least twice this amount of food protein in order to make up for this loss. Hence, during lactation also the protein intake should be well above normal, and preferably about 125 Gm. per day.

FAILURE TO ABSORB INGESTED PROTEIN.—In very rare instances there are diseases involving the stomach lining or the pancreas that interfere with the synthesis of the enzymes normally prepared by these organs. Under these circumstances (and it should be emphasized again that such conditions are very rare) normal protein digestion cannot take place, so that much of the protein taken by mouth is not absorbed.

In some instances also various pathologic lesions of the intestinal tract may increase motility of the intestine to such an extent that a portion of the food passes through it before complete absorption takes place. This will, of course, lead

eventually to a depletion of tissue protein and the appearance of negative nitrogen balance.

Extent of Protein Loss in Disease

The amount of protein lost from the tissues in disease can be amazingly high and is, in fact, frequently much higher than the clinician may realize. Yet, unless this protein deficiency is corrected, the convalescence will be long and unsatisfactory, broken bones or other injured areas will not heal promptly, annoying decubital ulcers may appear, surgical wounds may break down, and, in fact, the patient may even die.

It may be instructive to calculate the protein requirements of a moderately depleted patient. Let us suppose that the hospital laboratory determines the amount of protein in this patient's blood plasma and finds it to be 5 Gm. per 100 cc. Ordinarily we estimate that the normal value should be about 7 Gm. per 100 cc. Hence this patient has lost approximately 2 Gm. of protein from each 100 cc. of his blood plasma. Let us suppose that his body weight is 70 Kg. (150 lb.). Since the blood plasma makes up about 5% of the body weight, it follows that this patient has approximately 3.5 Kg. or about 3500 cc. of plasma. Since each 100 cc. has lost 2 Gm. of protein, 70 Gm. of protein would be required to make up the deficiency in blood plasma protein. Now it has been found experimentally that during protein depletion protein is lost not only from the blood plasma but also from all the tissues of the body. The magnitude of this tissue protein loss, pro-

vided the loss is not acute (i.e., hemorrhage, etc.), appears to be about 30 Gm. of tissue protein for each 1 Gm. of plasma protein.* Hence in our example we may assume that this patient has lost from his body approximately 2100 Gm. (70×30) of protein. Since the protein he has lost is his own body protein, which has of course a special composition not identical with food protein, it usually is estimated that something like twice this amount should be fed in order to restore his tissues to normal. The physician should therefore give the patient about 4200 Gm. of protein to restore his deficit.

One other calculation also must be made. Let us suppose that we wish to restore this protein within thirty days. Now we know that even if the patient receives no protein whatever he will lose nitrogen in his urine equivalent to something like 25 Gm. of his tissue protein daily. This will occur during the thirty-day period of therapy even though he is receiving adequate quantities of protein during this time. It follows, then, that he should be fed also at least 750 Gm. (30×25) to compensate for this protein loss. Hence the total amount of protein to be given the patient during the 30 days will be 4200 Gm. plus 750 Gm., or 4950 Gm. If we divide this figure by 30, we find that 165 Gm. of protein should be administered daily in order to return the patient to nitrogen equilibrium in the thirty-day period. If we assume that his normal diet furnishes 70 Gm. daily, it follows that about 95 Gm. of protein in the form of some type of satisfactory supplement must be given to him in addition to his food.

The ideal protein supplement must satisfy several important criteria:

1. It must contain a high percentage of protein, and this protein must contain sufficient quantities of all of the essential amino acids.
2. It, or the diet, should contain sufficient other sources of energy so that the protein fed will not have to be catabolized for energy.
3. It should be palatable so that it is not difficult for the patient to consume the large amounts of material that ordinarily will be required.
4. It should be in a form in which it can be incorporated readily into other foods, which again will make it easier for the patient to ingest.
5. It should not cause diarrhea or other intestinal disturbances.
6. Preferably it should have a very low ash content, and particularly a low sodium content. It will be recalled that protein deficiency is characterized by tissue edema. Physiologists and clinicians have known for many years that edema

formation is increased if excessive amounts of salts, particularly sodium salts, are ingested. In the presence of edema, then, most clinicians prefer to keep sodium intake at a minimum.

7. The essential amino acids should be present in properly balanced preparations in a form in which the protein containing them can be digested readily and the amino acids, therefore, absorbed. In the present stage of our knowledge, it is best to determine this by actual feeding experiments with animals. A protein that will not support normal growth and maintenance of body tissue protein reserves in animals probably will be unsatisfactory for humans, even though chemical analysis may show that all the known essential amino acids are present.

Under special circumstances soluble forms of protein will be required for therapy. If this type of supplement is required, it will be necessary to use hydrolyzed or predigested proteins, since very few tissue proteins are soluble. This hydrolysis or digestion can be accomplished by the use of enzymes, acids or alkalis. Unfortunately, all protein hydrolysates have unpleasant tastes, and many of them do not have as high nutritional values as the proteins from which they are prepared. For this reason it would seem to be preferable to use unhydrolyzed protein for the vast majority of patients, since as has been pointed out, only rarely are patients unable to digest and absorb protein taken by mouth.

An occasional patient is too ill to take any food at all by mouth. In such cases it may be necessary to inject a protein hydrolysate by vein. However, it must be realized that this is a temporary measure, and food by mouth should be started as early as possible. If solutions containing concentrations of hydrolysate higher than 3 to 5% are injected into a patient, distressing symptoms such as nausea, vomiting, and diarrhea may occur. If the product is not prepared carefully, the patient may also experience fever due to the presence of pyrogens, and may in some cases experience a sensitivity (anaphylactic) reaction. In view of the large amounts of protein ordinarily required, obviously it is difficult to give sufficient quantities of protein or protein hydrolysate by vein when the concentration used is only 3 to 5 Gm. in each 100 cc. of fluid injected.

In summary, then, in the vast majority of cases it would be preferable to administer protein supplements by mouth and to use native protein rather than protein hydrolysates. The latter type of preparation will be advantageous when the physician finds it advisable to administer protein in soluble form.

* Robert Elman: *J. Am. Dietetic Assoc.*, 18: 141, 1942.

Sulfonamides

by RUTLEDGE W. HOWARD*

IN the last century Paul Ehrlich foresaw the era of chemotherapy when mankind would have a chemical agent to destroy disease-causing organisms without harming the patient. After years of work he produced salvarsan, which is still a standard treatment for syphilis. No other important chemotherapeutic agent came to the fore until prontosil and sulfanilamide burst forth on the medical horizon. Then in rapid succession other important sulfonamides were discovered: sulfapyridine, sulfathiazole, sulfadiazine, sulfaguanidine, sulfamerazine, sulfasuxidine, sulfathalidine, and related compounds.

Some of these are better for certain purposes than others. In this discussion, it will be important to mention the drugs in relation to their clinical usage. An effort will be made to link the drug with the diseases for which it is most useful. Many of the facts presented are familiar to everyone, but a review and correlation of information is always helpful.

All the uses for the sulfonamides we know of now have not yet been established and fully evaluated. The clinical research is unending.

Absorption

When the sulfonamides are taken by mouth they are almost completely absorbed from the intestinal tract within two to four hours. Thus, it is necessary to give repeated doses on a definite schedule to maintain a fairly constant blood level. When the drugs are given by needle, the blood concentration is attained much more rapidly.

Fate After Absorption

The drugs reach the blood stream and are partly converted into acetylated forms. These are considered therapeutically ineffective and may be toxic. Average figures for acetylation of

IMPORTANT PLACE IN THERAPEUTICS
RETAINED BY SULFONAMIDES DESPITE
ADVENT OF ANTIBIOTICS... DRUGS ARE
REEVALUATED FOR PHARMACIST WITH
EMPHASIS ON NEWER DEVELOPMENTS

some representative sulfonamides would be:

Sulfanilamide....	20%
Sulfathiazole... ..	30%
Sulfapyridine	10-90% (very variable)
Sulfadiazine.....	15%

After these changes the sulfonamides are distributed to various body tissues in amounts depending primarily upon the amount of blood supply to the tissues. With the exception of sulfathiazole they pass readily into cerebrospinal fluid, reaching a level of 50 to 65% of that present in the blood. Sulfathiazole is said to reach only about a 20% level, compared with that in the blood. The sulfonamides, it should be noted, pass readily into the red blood cells, a fact of clinical importance since the blood picture must be watched during sulfonamide treatment.

Excretion

However the sulfonamides are administered, they are removed from the body by way of the kidneys in the urine. Kidney diseases resulting in poor kidney function may reduce excretion appreciably. Keeping the urinary water output high helps in the excretion of the drug. It has been recommended that the urine volume output should be NOT LESS THAN 1200 CC. DAILY. This may be obtained by forcing fluids. In warm weather, when the sweat glands remove much water from the body, more fluids should be taken to keep the urine volume high.

In pregnancy it is well to know that sulfonamides pass through the placenta into the fetal blood. This fact has made it possible to treat

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Paper adapted from a lecture presented at the 1946 seminar of the Northern New Jersey branch of the AMERICAN PHARMACEUTICAL ASSOCIATION.

the unborn child when necessary. Such occasions will arise when the mother's genital tract harbors the gonococcus.

Dosage for Internal Use

Many factors play a role in determining dosage if good therapeutic results are to be obtained. These may be listed briefly, although each patient requires special consideration by the physician.

Size of Dose depends upon many factors, including—

1. The type of infecting organism
2. The condition of the kidneys
3. The rate of drug absorption
4. The acuteness of the infection
5. The state of body hydration and the ability of the patient to take fluids
6. The tolerance of the patient
7. The drug concentration in the blood stream. (This last point does not indicate the clinical effectiveness of the treatment, however, and means that there is no substitute for good clinical judgment.)

Route of Dose depends upon many factors, including—

1. Contraindications for oral therapy (diarrhea, vomiting, postoperative)
2. Need for rapid use of the sulfonamides

Definite rules for dosage cannot be given for the individual patient, but we can set forth certain features about each of the better known sulfonamides with which the pharmacist should be familiar. We will discuss these in turn.

Sulfanilamide dosage: A blood concentration of 10 mg. per 100 cc. (10 mg. per cent) in adults has been found to give high therapeutic effectiveness in most infections which respond to the drug. In meningal infections and a few others, a higher blood level has been found necessary (up to 15 mg. per cent).

To obtain these concentrations, dosage has been suggested to be an initial oral dose of 3 to 5 Gm. of sulfanilamide followed by 1 to 3 Gm. orally every four hours day and night. Locally, the drug is often used in a dosage of 1 Gm. for each 10 square inches of surface involved. Limits have been proposed by competent investigators so that it is advisable at any one time for the physician to use not more than 15 Gm. on body surfaces, or 5 Gm. in body cavities.

Sulfapyridine and sulfathiazole dosage: Here we must realize that clinical judgment is more important than blood concentration. Nevertheless, it is worth mentioning that a blood level of 5 mg. per cent is considered adequate in practically all cases except meningitis where therapeutic requirements demand 10 to 15 mg. per 100 cc. of blood as an effective concentration. Translated into oral dosage for adults, this means the first dose is usually 3 or 4 Gm. followed by 1 Gm. every four hours. Intravenously, the initial dose is about the same, followed every six hours by 2 Gm.

Sulfaguanidine dosage: Here is a drug designed for use against intestinal infections. The feature quoted by independent investigators is that it can be given by mouth in doses great enough to saturate the intestinal tract without producing abnormally high blood concentrations.

It has been thus used with effect against bacillary dysentery. The initial dose is recommended as being 0.1 Gm. per kilogram of body weight, followed by 0.05 Gm. per kilogram of body weight every four hours until the number of stools is five or less per day.

Sulfadiazine dosage: Good results are usually achieved by giving 3 to 4 Gm. by mouth as the beginning dose, followed by 1 Gm. every six hours thereafter. Certain patients will require a four-hour interval. It has been stated that, when sulfadiazine is given intravenously,

A. PH. A. BRANCH SEMINAR

Plans to hold another seminar as part of its program of professional activities were announced by the Northern New Jersey branch of the American Pharmaceutical Association at the October meeting. The accompanying paper was adapted from one of the professional reviews presented last spring at the first series of seminar lectures, and is presented here for pharmacists in other parts of the country.

By sponsoring the seminar, the Northern New Jersey branch has performed an important service to practicing pharmacists, returning pharmacist-veterans and the citizens of the state. It sets a high standard for other branches of the Association that may be planning similar programs.—The Editor

it is often necessary to give the drug only at twelve-hour intervals. This advantage to the patient is obviously a great one, and results from the long maintenance of effective amounts of the drug in the circulation and tissues.

Sulfamerazine (methyl sulfadiazine): In this rather recent addition to the sulfonamides we have a drug which is very similar in pharmacology and clinical usage to sulfadiazine itself.

NOTE: Incident to treatment with sulfadiazine or methyl sulfadiazine, the physician should consider the advisability of giving an alkali. Recent reports show that crystalluria due to either of these drugs may be prevented or reduced. This is most readily accomplished by giving sufficient alkali so that the urine is maintained at least as alkaline as pH 7.5. To achieve this end, the recommendation is to give by mouth from 10 to 20 Gm. of sodium bicarbonate in divided doses every twenty-four hours.

Succinylsulfathiazole (sulfasuxidine) is another newly added sulfonamide which should be mentioned. It is said to be so poorly absorbed from the gastrointestinal tract that only about 5% of the drug is excreted by the kidneys. Its use, therefore, is restricted by its lack of absorption from the alimentary tract. Here it helps change the bacterial flora, particularly if Shiga, Flexner, or Sonne dysentery bacilli are present at the start. The colon bacillus itself is somewhat affected, although typhoid, paratyphoid, streptococcus fecalis and *B. proteus* are not as susceptible.

It has been recorded that certain conditions interfere with the efficacy of sulfasuxidine. Important among these are:

1. The use of liquid petrolatum during treatment.
2. The presence of a watery diarrhea.

3. The occurrence of hard, constipated stools. In these, the bacterial action of the drug is less effective.

Phthalylsulfathiazole: Here is a further attempt to find an improved type of intestinal antiseptic. This drug's chief merit lies in its low solubility and only very slight absorption. A dose of 125 mg. per kilogram of body weight daily can cause a significant lowering in the coliform population.

Dosage for children (sulfadiazine): Dosages suitable for infants and children will vary markedly from drug to drug and from disease to disease. The short table given below may be of some help to your physicians in determining the several dosages for older children and for infants and smaller children.

Relative Effect Against Specific Infections

Now that we have covered the main points of the principal sulfonamides without going into detail, I would like to mention in a general statement that the sulfonamides should be considered most useful against certain specific organisms. Against any given infecting bacteria there will be a sulfonamide of choice. Let us briefly review this point:

For the staphylococcus group of infections the drugs would be used in the following order of choice:

1. Sulfathiazole
2. Sulfadiazine or sulfamerazine
3. Sulfapyridine
4. Sulfanilamide

For hemolytic streptococcus infections, the order of choice would be:

1. Sulfadiazine (or sulfamerazine)
2. Sulfanilamide
3. Sulfathiazole
4. Sulfapyridine

SULFADIAZINE FOR OLDER CHILDREN

BLOOD CONCENTRATION	INITIAL DOSE	MAINTENANCE DOSE
10 to 15 mg. per cent	4 Gm. (60 grs.)	1 Gm. (15 grs.), q 4 h.
5 to 10 mg. per cent	2 to 3 Gm. (30 to 45 grs.)	1 Gm. (15 grs.), q 6 h.
3 to 5 mg. per cent	1 to 1.5 Gm. (15 to 23 grs.)	0.5 Gm. (7.5 grs.), q 6 h.

SULFADIAZINE FOR INFANTS AND SMALLER CHILDREN

AGE	INITIAL DOSE	MAINTENANCE DOSE
Under 6 months	0.5 Gm.	0.25 Gm., q 6 h.
6 months to 3 years	1 Gm.	0.5 Gm., q 6 h.
3 years to 10 years	2 Gm.	1 Gm., q 6 h.

For pneumococcus infections, the order is:

1. Sulfadiazine or sulfamerazine
2. Sulfathiazole
3. Sulfapyridine
4. Sulfanilamide

For meningococcus infections:

1. Sulfadiazine or sulfamerazine
2. Sulfanilamide
3. Sodium sulfapyridine
4. Sodium sulfathiazole

For colon bacillus infections:

1. Sulfadiazine or sulfamerazine when infection is anywhere except in intestine.
2. Sulfathalidine when infection is in or in relation to the intestine.

Subcutaneous Administration

Up to the present we have discussed dosages from the standpoint mainly of the adult who takes the drug by mouth. For a moment it will be profitable to point out that the drugs may also be given conveniently and safely under the skin into the fatty tissues overlying the muscles. The majority of patients reported treated by this method received 0.5% sodium sulfonamide solutions. Isotonic sodium chloride solution was the diluent most commonly used, although certain evidence is available that sodium sulfadiazine should be diluted with distilled water. Plummer and Lockhart found that glucose solutions tended to form a loose compound with sodium sulfadiazine to render it less effective both in the test tube and in the patient. They prefer distilled water as a diluent. Although the sodium sulfonamide solutions were alkaline (ranging in pH value from 9.2 to 10), no untoward local reactions were reported.

Such hypodermoclysis of the sulfonamides may be run into both thighs over periods of from one to five hours. It is usually possible eventually to give the drug orally. Such administration under the skin is of advantage mostly when the patient cannot for one reason or another take the drug by mouth. It possesses the advantage over intravenous injection that the sulfonamides are more slowly absorbed and are thus more steady in their therapeutic efficacy.

Topical or Local Use

Although the large field of use for sulfonamides is in oral administration, another field of use involves applying these drugs to body surfaces. Several investigators have shown that sulfonamides may be of definite value when they are applied as an ointment or cream. There are

U. S. production of sulfonamides in 1945 for domestic use totaled approximately 4,047,983 pounds. That this class of drugs continues to rank high in medical practice is further confirmed by the North Carolina prescription survey reported in the May issue. In the accompanying paper, Dr. Rutledge W. Howard presents an authoritative review for pharmacists on the present status of the sulfonamides.

many preparations for local application now available. Each possesses certain advantages. It would be well to mention here that the type of ointment base is of extreme importance if the sulfonamide ointment shall be used with success. Quite often the physician wishes a very high concentration of the drug locally. The ointment bases which release these high concentrations would be the emulsions—either oil in water or water in oil, and the aqueous jellies containing either pectin or bentonite, or the vanishing cream type of base.

This type of base, however, does not provide a very high degree of lubrication and would, therefore, be undesirable if the physician wishes more lubrication and a steady lower concentration of the sulfonamide at the site of application. For the higher degree of lubrication, an all-grease base containing petrolatum would be more desirable.*

Sulfonamide Fastness

In sulfonamide fastness we have a feature which is encountered commonly in the field of treatment.

The early work on the sulfonamide drugs gave the definite impression that the bacterial killing power and bacteriostatic activity of sulfonamides were inhibited by certain substances. Broken down dead tissues, degenerating bacteria, and certain tissue extracts are known to destroy the therapeutic value of the drugs. The exudate occurring on wound surfaces contains ingredients which inhibit the action of the sulfonamides. *This feature was first noted and reported in cases*

* It is of interest to mention here, incidentally, that penicillin, another of the newer chemotherapeutic agents, is primarily used in an ointment base which neither contains nor attracts water, since the presence of water results in a more rapid destruction of the penicillin.

INCIDENCE OF IMPORTANT TOXIC REACTIONS DURING THERAPY WITH SOME SULFONAMIDES IN ADULTS*

TOXIC REACTIONS	SULFANILAMIDE		SULFAPYRIDINE		SULFATHIAZOLE		SULFADIAZINE	
	No.	%	No.	%	No.	%	No.	%
	Patients	Reactions	Patients	Reactions	Patients	Reactions	Patients	Reactions
Fever	2910	5%	2421	3.1%	1316	6%	4194	1.6%
Rash	3066	2.2%	3171	2%	1651	5.2%	5137	1.3%
Acute Hemolytic Anemia	1630	2%	2363	1.1%	Very rare		Very rare	
Leukopenia	1000	2%	2026	2.1%	1231	1.6%	4601	1.5%
Agranulocytosis	1000	0.1%	1444	0.8%	Rare		Rare	
Hematuria { Gross Micro	Extremely rare		2899	4.6%	1749	4.7%	5137	1.7%
Oliguria, Anuria or Azotemia	Extremely rare		2560	2.2%	1124	1.1%	5137	0.4%
Hepatitis	1000	0.6%	Rare		Very rare		Very rare	
Total Important Toxic Reactions		11.9%		15.9%		18.6%		6.5%

* These figures are based upon the reported incidence of toxic reactions and the author's experience, and in the instance of sulfadiazine also upon personal communications from Finland, Plummer, Flippen, Bullowa, Spink and Satterthwaite. Note the low incidence of toxicity with sulfadiazine.

when the sulfonamides were applied locally.

Failures when the drugs are given by mouth have led investigators to feel that a similar inhibition occurs within the body. Whether this resistance of the bacteria is naturally occurring or is acquired is not definitely known. Many men feel, however, that repeated exposure to quantities of the sulfonamides in ineffective doses does help create resistant strains of bacteria. Inadequate sulfonamide dosage, therefore, may render the patient much more difficult to treat.

It has been shown that once a resistant strain of bacteria is developed, it can be transmitted from one host to another, retaining its drug resistance. This would seem to be especially true in the case of gonorrhea. One plea which all interested workers are making is that the initial dose and subsequent treatment should be adequate. The world will probably otherwise experience a survival of the fittest bacteria which will not respond to the sulfonamides adequately. This is one of several reasons why sulfonamides must be administered only under close medical supervision.

A large field of research now stands open to those who are interested so that a substance may be developed which will prevent sulfonamide resistance in bacteria. An early step in this direction would be to have available a very effective substance to remove wound exudates. This would approach the problem when the drugs are used locally. Perhaps a similar type of substance can be found which could be taken internally and prevent sulfonamide resistance when the drugs are taken orally.

At this point, before we consider some of the more special uses of the sulfonamides, it will be

of help to mention the toxic reactions which the sulfonamides may cause.

Toxic Reactions

Chief among these would be the renal or kidney toxicity which may occur. Crystals of the drug may appear in the urine as we have already mentioned, and red blood cells may likewise be found. Although this toxic reaction is seldom found in a serious degree, it is very important to be aware of it. The physician will usually discontinue the use of the sulfonamide under these circumstances. Occasionally, it may be possible, by reducing the dosage and by giving larger quantities of fluids, to continue the administration of the sulfonamide. The responsibility for this, however, should always rest with the physician in charge of the case.

Hemolytic anemia and a drop in the number of white cells have likewise been reported. This necessitates a study of blood during sulfonamide administration. The presence of hemolytic anemia, leukopenia or agranulocytosis means that the drug should be stopped and measures taken to remove the drug from the patient as rapidly as possible.

A somewhat more common and apparently less serious toxic effect is the presence of nausea and vomiting. Drug fever, drug rash and temporary central nervous system disorders have likewise been noted. The table of toxic reactions given above will be of interest.

These figures, together with the reports in the literature, show that sulfadiazine elicits a lower incidence of complications than any of the other sulfonamides noted in this table. Sulfanilamide is the possible exception, but this drug does not

have the beneficial effects which sulfadiazine possesses against organisms other than the hemolytic streptococcus.

Special Uses of Sulfonamides

It should be of help at this point to mention certain special uses of the various sulfonamides to help keep us fairly well up to date in this field.

Preventive use of sulfadiazine against bacterial respiratory infections: A considerable amount of work has been done during the war on the prevention of bacterial respiratory diseases by sulfadiazine. Work of great interest was reported in a publication released by the Bureau of Medicine and Surgery, Navy Department, Washington, D. C. It is publication #284.

Observations made at various Naval Training Stations indicate that chemoprophylaxis was 85% effective in preventing bacterial infections of the respiratory tract under conditions favorable to the spread of these infections. In these groups of Naval personnel, the study showed that, on the average, a saving of a day per man per month could be achieved when bacterial respiratory agents are active.

It is of interest here to report that sulfadiazine was given in this investigation to half a million men. No renal complications were detected. Reactions did occur in only $\frac{1}{2}$ of 1% during this program. Most of the reactions were of the skin rash variety. Only two fever reactions occurred and these appeared to be reversible.

Sulfadiazine and cholera: Cholera, a scourge of the Far East in particular, has recently been reported by Commander Julius M. Amberson as being successfully treated with sulfadiazine. The cholera vaccine may be used as a preventive measure but when a patient actually is a cholera victim Dr. Amberson's work will be of extreme value. The disease is of great importance in certain areas. For example, in Calcutta, India, 3335 people had cholera. Of these, 1912 died.

Commander Amberson reports that his most effective form of treatment was the use of sulfadiazine in combination with adequate amounts of blood plasma. He reasoned that the plasma helped give the patient an effective circulating blood volume. This then gave the sulfadiazine an opportunity to reach the infected parts of the body. His results were extremely good. His work was reported recently in the *Navy Medical Bulletin*.

Prevention of rheumatic fever recurrences: In rheumatic fever we have a field of preventive medicine which can save much suffering and hardship as well as lives. Sulfanilamide, sulfathiazole and, more recently, sulfadiazine have all been used in people who have had rheumatic fever, in an effort to prevent further occurrences of the active disease. The results have been quite consistent in showing that a much smaller number of patients treated with sulfonamides preventively have a flare-up of the disease. On the other hand, control series cases receiving no preventive sulfonamide had a much higher incidence of rheumatic fever relapse or recurrences.

Summary

We have endeavored to review briefly the clinical aspects of the sulfonamide drug field. In a general way we have discussed dosage, absorption, acetylation and excretion and have outlined the comparative effectiveness of various sulfonamides in specific types of infection. Certain features of interest have received special mention, including sulfonamide fastness, the local use of sulfonamides, and sulfonamide reactions.

The preventive use of sulfonamides is still being investigated and should keep our interest alive from this standpoint. The use of sulfonamides in hitherto highly fatal diseases, such as cholera, will likewise stimulate further research.

We have entered the field of antibiotics, but in doing so we have not left the sulfonamide compounds to be forgotten. They continue to hold a high and valuable place in therapy. The extent to which sulfonamides shall continue to be used in the presence of such drugs as penicillin and streptomycin will depend in large measure upon clinical research now going on.

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PREScription *Information* SERVICE

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TREATING VENEREAL WARTS

We are trying to locate a product called Prodo-phylene (?), intended for the treatment of venereal warts. Can you help us?—O. G., California

The product you are looking for is podophyllin, the active resin of podophyllum. This should be available through any local wholesale druggist. The background for the use of this material in the treatment of soft venereal warts may be found in an article by J. V. Macgregor, *British Medical Journal*, Vol. I, page 293, 1945.

GOLD SALT PREPARATIONS

Please advise where we can obtain a product called "Lauron," which is a gold preparation for parenteral use.—E. R., Louisiana

This gold salt preparation does not appear among products accepted by the Council on Pharmacy and Chemistry, in Gutman's Drug Encyclopedia or other standard reference sources.

There are, however, a number of parenteral gold preparations on the market which may serve your need. *New and Nonofficial Remedies* lists Abbott, Merck and Searle as accepted suppliers of parenteral gold sodium thiosulfate. In addition, the Hille Laboratories (1791 Howard St., Chicago 26, Ill.) market a colloidal gold preparation called Aurol. Lakeside Laboratories (1707 East North Ave., Milwaukee 1, Wis.) also market a gold sodium thiosulfate preparation for parenteral use.

As you know, gold salts have been used rather successfully in treatment of lupus erythematosus, but other possible indications such as rheumatoid arthritis remain in doubt. In any circumstances the gold salts must be used with extreme caution because of the frequency of toxic reactions and contraindications.

FORMULA FOR CREAM SHAMPOO

We would appreciate receiving a formula for a cream shampoo.

Could you also inform us as to the method of incorporating DDT, pyrethrum, or rotenone in a cream shampoo formula?—E. D., Ohio

To make a liquid cream shampoo, it is suggested that you prepare an emulsion of cetyl alcohol or stearyl alcohol with sodium lauryl sulfate (Duponol C, Dupont), then add a sufficient amount of water and sodium lauryl sulfate to produce the desired sudsing point and concentration. The following formula will illustrate the procedure:

Cetyl alcohol	15 Gm.
Propylene glycol.....	10 Gm.
Beeswax	2 Gm.
Sodium lauryl sulfate.....	2 Gm.
Water, q. s.	

To make..... 100 cc.

Melt the fats and the propylene glycol and bring to 65° C. Dissolve the sodium lauryl sulfate in the water and bring to 65° C. Under rapid agitation add the water to the fats. When

emulsification is complete add fifty more grams of sodium lauryl sulfate dissolved in enough water to bring the total volume to 500 cc.

We would not advise incorporation of DDT. This insecticide is very slow acting, and the low concentration and brief period of application would not be effective. Possible toxicity must also be considered. It should be borne in mind that a shampoo is designed primarily to remove material from the scalp—not as a vehicle for application. An authority on cosmetics is unaware of a combination of the suggested type having been used.

WHAT IS GLONONIN?

Please send us information concerning "glonoin" including indications for its use. We are unable to obtain data from available sources.—M. M., New York

"Glonoin" is a synonym for the explosive, nitroglycerin. The medicinal product to which you refer is undoubtedly spirit of glyceryl trinitrate, also known as spirit of nitroglycerin and spirit of glonoin. This product is official in the Pharmacopœia as a 1 to 1.1% alcoholic solution of nitroglycerin.

In general, spirit of glyceryl trinitrate has an action similar to that of sodium nitrite, except that its action is more rapid, and also fleeting. Crandall has pointed out that it is not suited to conditions for which prolonged vascular dilatation is desired.

The effect of glyceryl trinitrate is to lower blood pressure. There have been reports of considerable irrational use of the drug as a cardiac stimulant. For specific information concerning indications and administration we would suggest that you contact the American Medical Association or other available sources of therapeutic information.

LIQUID FLOOR POLISHES

We would like to obtain several good formulas for liquid wood floor polish which can be easily manufactured and easily applied. Can you send the above formulas or advise us where they can be obtained?—I. F., New York

Formulas for liquid floor polishes are given in various volumes of the seven-volume compendium by Bennett called "The Chemical Formulary." This is published by the Chemical Formulary Company, 950 Third Ave., Brooklyn,

New York. We believe that one of these will fill your need.

Two of the more conventional type formulas are as follows:

LIQUID FLOOR POLISH

Melt:

Paraffin wax (50–52° C.).....	50 Gm.
Ceresin (58–60° C.).....	10 Gm.
Carnauba wax.....	40 Gm.

and dissolve:

In summer, 7–9 parts in 93–91 parts of turpentine.

In winter, 6–7 parts in 94–93 parts of turpentine.

DEODORIZED FLOOR POLISH

Paraffin wax (50–52° C.).....	18 Gm.
Carnauba wax.....	5 Gm.
Ceresin (58–60° C.).....	2 Gm.
Rosin, pale.....	4 Gm.
Stearin.....	1 Gm.
Caustic soda (38° Be.).....	0.5 cc.
Water.....	66 cc.

Boil and stir until smooth.

A water-resistant floor polish of the emulsion type is considered advantageous. The emulsifier morpholine has been used in many such formulas, and may be obtained from the Carbide and Carbon Chemical Corp., New York City.

Morpholine has a moderate volatility so that it gradually evaporates along with water from the drying emulsion polish, leaving a non-hygroscopic and water-resistant film which is said to give a high brilliance with little rubbing.

Two such formulas, given in Bennett, are quoted below. Careful attention should be given to the method of preparation, and the wax should be light-colored and the shellac fresh.

FORMULA NO. 1

a. Carnauba wax.....	11.2 lb.
Oleic acid.....	2.4 lb.
Morpholine.....	2.2 lb.
Water.....	67.0 lb.
b. Shellac.....	1.5 lb.
Morpholine.....	0.2 lb.
Water.....	15.5 lb.

Preparation:

Melt the carnauba wax carefully with the oleic acid and maintain the temperature closely at 90° C. Stir until well mixed, add the morpholine, and stir constantly until the whole mass is quite clear. In the meantime, heat the water to the boiling point in a separate container. Add it

slowly to the hot wax mixture with steady stirring, making certain that each small portion is well incorporated before further addition. The mixture becomes increasingly viscous and should have the appearance of petrolatum when two-thirds of the water has been added.

At this point, the mixture begins to thin out, and the remainder of the water may be added rapidly. The total time for adding the water should be thirty to forty minutes. A steam-jacketed kettle and a hand-operated paddle or slow-speed, large-bladed propeller are recommended for successful production.

Allow the mixture to cool. While slowly stirring, add the shellac solution. This has been made by warming together the morpholine, water and shellac indicated in *b* above. Filter if necessary.

Another morpholine dry-bright polish is formulated as follows, using paraffin as a substitute for part of the carnauba wax:

NO. 2

Carnauba wax.....	64.8 lb.
Paraffin wax.....	7.2 lb.
Morpholine.....	14.4 lb.
Oleic acid.....	15.3 lb.
Boiling water.....	430.0 lb.
Cold water.....	100.0 lb.

Preparation:

By observing great care in the gradual addition of boiling water up to the point of emulsion inversion (see above), a polish is prepared which is exceptionally translucent.

BRITISH OINTMENT BASE

Can you inform us where we may obtain the formula for the washable ointment base suggested by Dr. P. B. Mumford, as published in the British Journal of Dermatology and Syphilis in 1938?—J. G., Illinois

The formula in which you are interested appeared in a paper titled "Emulsifying Bases in Dermatology," *British Journal of Dermatology and Syphilis*, 50:540-543, October, 1938.

A photostatic copy of this paper may be obtained from the Army Medical Library, Photoduplication Service, 7th St. & Independence Ave., S. W., Washington 25, D. C. It is our understanding that there will be no charge for this service.

If you wish to obtain a copy of the original journal, the publisher's address is H. K. Lewis & Co., Ltd., 136 Gower St., London, W. C. 1.

REPLACEMENT FOR OLIVE OIL

Has there been any official sanction covering the substitution of cottonseed oil U. S. P. for olive oil U. S. P. by the pharmacist in compounding prescriptions? We have had several inquiries regarding this matter and have been referred to you for an answer.—M. A., Pennsylvania

No official sanction could be given covering the substitution of cottonseed oil for olive oil in compounding prescriptions. It is quite true that cottonseed oil will often produce a pharmaceutically acceptable preparation when olive oil is not available, but such substitution in each instance must be approved by the physician.

In the first supplement to the *National Formulary VII* cottonseed oil was authorized as a permissible replacement for olive oil in N. F. products. So far as N. F. products are concerned, therefore, it is permissible to substitute cottonseed oil since this change was officially adopted in the formulas due to the wartime shortage of olive oil.

COAL TAR WITH MINERAL OIL

We have had trouble compounding the following prescription due to the fact that crude coal tar is only slightly soluble in mineral oil:

Crude coal tar.....	2.5 Gm.
Mineral oil, to make.....	500 cc.

What do you consider the proper way to compound this prescription?—O. G., California

Coal tar and mineral oil are so incompatible that it is frequently difficult to dispense such a mixture. If you mix the coal tar with a small quantity of hydroxystearin sulfate N. F. VIII and gradually dilute this with the mineral oil, it should be possible to obtain a product of desirable consistency. Probably 2% hydroxystearin sulfate will be sufficient, but the exact amount will depend upon the particular coal tar used.

Hydroxystearin sulfate, which is also known as sulfated hydrogenated castor oil, may be obtained from the National Oil Products Company, 1st and Essex Streets, Harrison, N. J.

SOURCE OF EMULSIFYING AGENT

Can you tell us where we may obtain the emulsifying agent Tween 80?—C. P., New York

This product is supplied by the Atlas Powder Co., Wilmington 99, Del.

Science News Capsules

ACUTE ALCOHOLICS may be treated by insulin with greater ease and comfort than by the usual method of gradually withdrawing alcohol from the diet. Small doses of insulin are administered two or three times daily before meals. This speeds up the oxidation of the blood sugar which, in turn, speeds up the elimination of alcohol itself. Successful use of the method is reported from the Ring Sanatorium, Arlington, Mass.

AN ARTIFICIAL EYE that moves like a natural eye has been demonstrated by Dr. A. D. Reudemann of the Cleveland Clinic Foundation. A fine mesh of tantalum fastened to the back of a plastic artificial eye is stitched to the eye muscles.

"HUM" OF THE UNIVERSE, the mysterious radio signals from outer space, are now attributed to interplay of free electrons in interstellar space, instead of blasts of radiation in distant stars as formerly believed.

STRONG WARNING about the "danger of addiction" to isonipocaine (Demerol) comes from Commissioner H. J. Anslinger of the Bureau of Narcotics. U. S. Public Health Service scientists and others have demonstrated its addiction properties, hence the narcotic control over Demerol recently imposed by Congress.

SKIN ANTHRAX has been successfully treated with penicillin in 25 patients at Camp Detrick, Md. Anthrax is a disease of cattle which humans get from handling infected hides or hair, thus constituting an important medical problem in the wool and leather industries.

THE MESOTRON, considered the key to the atomic nucleus, has finally been measured with some assurance of accuracy. After cloud-chamber analysis of 26 mesotrons, University of California physicists reported the mass as 202 times that of the electron, very close to the theoretical figure which had been assigned to it.

MENTAL OR NERVOUS ILLNESS will strike 10,000,000 Americans sometime during their lives, according to a U. S. Public Health Service estimate. To help meet the situation Congress enacted the National Mental Health Act, establishing a National Institute of Mental Health, grants-in-aid for re-

search and personnel training, and a National Advisory Mental Health Council.

ATOMIC ENERGY POWER PLANTS would cost four times as much to build as coal-burning plants, but would generate power at a slightly cheaper cost, Westinghouse engineers estimate. Application of atomic energy to production of electricity is "much closer at hand than most people think," they maintain.

SAVING FISH from furunculosis, strangely enough the most destructive disease in fish hatcheries, is a new job of sulfamerazine. U. S. Fish and Wildlife Service experiments offer the first real hope of effective treatment.

A GREAT WALL in the mountains of northeastern Paraguay, 4500 feet long and more than 120 feet high, may hold the secret of a past civilization. Built of huge blocks of polished red granite, the structure is considered an excellent work of engineering. Drawings, and signs that may be hieroglyphics, are expected to yield valuable information to archeologists who will study the site.

A GROWTH HORMONE from the pituitary gland is considered the single substance responsible for the basic mechanism of growth by University of California scientists, following extensive experiments. This opens a new field for study of some fundamental life processes, but clinical application is not yet in sight.

FAMINE would join the atomic bomb and man-made pestilence to make World War III an apocalyptic horror. Complex organic chemicals, like 2,4-D, have been developed which will kill or stunt field crops when sprayed from planes.

SURPLUS BULLET-PROOF JACKETS from the Army will be put to good use by U. S. oil prospectors in the jungles of Colombia where they are targets for the primitive arrows of natives.

ETHER USED INTRAVENOUSLY can relieve diabetic patients of the extreme pain due to ischemia which often occurs after diabetes has been controlled for many years by insulin. Noting that ether causes increased blood circulation when given as an anesthetic, Dr. Robert A. Katz of the Touro Infirmary,

New Orleans, made tests on himself to determine the safety of ether injections. A local anesthetic added to the ether lessens the pain, and peanut oil may be added to prolong the effect.

CANCER OF THE LARYNX is being cured in an increasing number of cases by radium or x-rays, where laryngectomy was formerly the only hope of saving the patient. In a series of 118 cases, five-year cures were achieved in 42% of the patients, and three-year cures (the time elapsed since treatment) in 39%, Dr. Max Cutler of the Chicago Tumor Institute reports. "Concentration radiotherapy," as the treatment is called, involves the use of the most intense radiation practical.

S/V SOVABEAD, a new desiccant (Socony Vacuum Oil Co.), offers aid wherever lower humidity is needed in industry or homes. A few beads of the material in a salt shaker prevents caking. A handful in a tool box avoids rusting. As compared with silica gel, the material is extremely hard and durable, and does not easily become powdered.

PARA ARSENOSOPHENYLBUTYRIC ACID has been successful in the treatment of 319 human cases of African sleeping sickness. It was estimated that 90% of the early cases can be cured within a period of one week if the standard total dosage is used, whereas other drugs may have to be continued for as long as twelve to fifteen weeks. Intramuscular injection proved to be as effective as intravenous injection.

FURACIN, a yellow powder derived from the hulls of oats, appears to be another valuable new drug. Believed to be bactericidal as well as bacteriostatic, this nitrofurantoin has been used in the treatment of infected ulcers and superficial skin infections with "very good" results. It is available as an ointment (Eaton Laboratories), and may eventually be offered in oral form if clinical work confirms laboratory experiments.

PNEUMONIA DEATHS had dropped to less than 4 out of every 100 cases by 1942, thanks to the advent of the sulfonamides. In the pre-sulfa years, 1935-37, the mortality rate was about five times as great.

COTTON COLORED BY NATURE has been produced experimentally in Russia by careful plant breeding. These naturally colored cottons are said to fade less than artificially dyed fibers, are not subject to deterioration resulting from dying and are more resistant to wilt.

BACTERICIDAL RADIATION and the emission of ozone from a tiny ultraviolet lamp will be used to assure odorless refrigerators, improve sanitation, enable longer preservation of food, and check

the growth of mold and bacteria on the food. The lamp is about the size and shape of an automobile headlight bulb, a miniature relative of the commercial Sterilamp.

ENCEPHALITIS may be caused by the same virus which causes fever blisters and cold sores. During the first world war some scientists believed this, but only recently has confirmatory evidence been forthcoming.

WORLD'S LARGEST cyclotron and synchrotron and a uranium pile for producing radioactive elements for laboratory work will be constructed at Camp Upton, N. Y., by Associated Universities, Inc. Pure research looking to peacetime use of atomic energy is the main objective. About a dozen buildings will house the staff of nearly 1000 technical and nontechnical personnel.

NESA, commercial name of a permanent transparent coating used on airplane windshields, conducts an electric current which clears the glass of ice and fog.

COLISTATIN, a new antibiotic of possible practical significance has been discovered in Russia. It is produced by a bacillus found in black earth or chernozem soils.

BACTERIOPHAGE preparations are being used in Russia to treat infected wounds. At the All Union Congress of Surgeons held in Moscow recently it was reported that the technique had proved itself in a series of more than 1000 patients. Local applications to infected soft-tissue wounds gave positive results in 82.9% of such cases. Bacteriophage may also be used as a dressing to prevent complications.



OPERATING STATEMENTS OF 1945

PRESCRIPTION revenue, typically one-sixth to one-eighth of total income in a retail pharmacy, may produce more than one-fourth of the total gross margin realized from all sales. Thus concludes the forthcoming *Lilly Digest* of an analysis of prescription department activities in 677 pharmacies which supplied detailed data on their 1945 operation. The favorable returns from a prescription laboratory stem from the fact that the professional services involved produce margins which may be as much as 60% of sales, whereas average, total gross margins in pharmacies are now about 33% of sales.

The average revenue derived from prescriptions in the 677 pharmacies was \$8477 in 1945, an increase of about 17.4% over the previous year. Prescriptions represented 14.1% of total volume.

This income represents, on the average, 7064 prescriptions annually, or 136 per week. Assuming that these pharmacies maintained a gross margin of 55% or \$4662, it may be seen that professional services can justify the continuous attention of a pharmacist. Routine work could then be shifted to helpers who do not have professional qualifications. The owner who is a pharmacist will thus have sufficient time to supervise operation of the pharmacy and take care of his professional duties. He can devote attention to further development of the services for which he was trained and which are his main purpose in the community.

Pharmacy owners today have an unusual opportunity to hold prescription receipts at present levels, the *Lilly Digest* points out. More people than ever before have been consulting physicians about their ills. More physicians have been writing more prescriptions than ever before. It will take hard work and persistent, cooperative effort between pharmacists and physicians, however, to maintain the trend toward rational medication under medical supervision. When deflation sets in, there will be a natural tendency for people to turn once more to home remedies and other concoctions.

Despite current inflation in most fields, prescription prices have remained stable. The average price was \$1.20 in pharmacies which reported prescription prices in the Lilly study, compared with an average of \$1.10 for the previous year. Part of this increase would no doubt be accounted

**SALES AND PRESCRIPTION PRACTICE
REACHED A NEW HIGH BUT PROFITS
DID NOT KEEP PACE; MERCHANDISE
STOCKS REFLECT EXCESSIVE BUYING**

for by the relatively high cost to the pharmacist of some new medications.

The geographic variations in average prescription prices were as follows:

GEOGRAPHIC VARIATIONS IN PRESCRIPTION PRICES

New England States.....	\$1.17
Middle Atlantic States.....	1.17
East North Central States.....	1.34
West North Central States.....	1.18
South Atlantic States.....	1.05
East South Central States.....	1.01
West South Central States.....	1.20
Mountain States.....	1.21
Pacific States.....	1.41
United States.....	1.20
Canada.....	1.28
Average.....	1.20

The variations in average prescription prices by size of city were small and show no consistent pattern.

VARIATIONS IN PRESCRIPTION PRICES BY SIZE OF CITY

Under 5000 population.....	\$1.10
5000 to 20,000.....	1.27
20,000 to 50,000.....	1.23
50,000 to 100,000.....	1.33
100,000 to 500,000.....	1.22
Over 500,000.....	1.28
Average.....	1.20

Of each 100 prescriptions filled in these pharmacies during 1945, usually about 59 were being filled for the first time. The other 41 were refills. Thus the pharmacy owner who keeps an account only of prescriptions filled for the first time may underestimate his prescription volume by more than 40%. The ratio of refilled prescriptions to total prescriptions varies somewhat geographically, ranging from 52.2% refills in the New England states to 31.6% in the West South Central states.

TABLE 1—MONTH-TO-MONTH FLUCTUATIONS IN PRESCRIPTIONS BY NUMBER FILLED PER PHARMACY

STORES COMPOUNDING IN 1945:	J	F	M	A	M	J	J	A	S	O	N	D
1 to 5 prescriptions daily....	100	98	110	99	95	90	87	94	93	100	109	130
5 to 10 prescriptions daily....	100	94	102	95	94	85	79	83	82	94	103	124
10 to 20 prescriptions daily....	100	95	104	95	95	88	87	89	89	97	102	122
20 to 40 prescriptions daily....	100	96	105	94	94	88	87	91	91	100	102	122
40 up prescriptions daily.....	100	93	102	92	92	88	85	88	88	96	95	113
Average.....	100	95	104	94	94	88	85	89	89	98	99	119

A commonly heard fallacy is that most prescription refilling occurs in a few winter months. This is not borne out by the Lilly study, in which 482 of the 677 pharmacies supplying separate reports on the prescription department also indicated the number of new and refilled prescriptions month by month. In these 482 pharmacies the fluctuation in the proportion of refills to total prescriptions was greatest, on the average, between the months of December and January. Even here the variation was only 3.2%.

Seasonal variations in the total number of prescriptions filled are also apt to be greatly overestimated. The average fluctuations in pharmacies reporting to Lilly, distributed throughout the country, were tabulated as shown in Table 1.

Contentions that the operation of a prescription laboratory calls for an investment in equipment, supplies and stock out of all proportion to the prospective income appears to be correct only if the number of prescriptions filled averages 5 or less daily, according to the survey data.

Of the 677 pharmacies that supplied reports for 1945 on their prescription departments, there were about 22% that filled an average of 5 prescriptions or less daily. These owners had a return of only \$1.50 in 1945 for each dollar invested in their prescription department stocks—a higher figure than in former years but still distressingly small. If the gross margin on pre-

scriptions averaged 50% of the prescription price received, the average rate of turnover was once every sixteen months; if the gross margin was 60%, the turnover was once every twenty months.

Pharmacies filling 20 to 40 prescriptions daily received \$5.12 for each dollar invested in prescription department stock, and would have a turnover of 2.5 times per year assuming a 50% gross margin. Those filling 40 or more daily had revenues of \$7.09 per dollar invested, with a turnover of 3.5 times assuming an average prescription margin of 50%. The relationship between investment and prescription sales-dollar during the years 1940 to 1945 for prescription practices of various size are shown in Table 2.

There is evidence that in 1945, as in earlier years, the pharmacies with the busiest prescription laboratories were the pharmacies in which over-all profits were the highest. This is to be expected. An idle prescription department earns no profits for anyone. A pharmacist who is not busy at his profession in his pharmacy cannot expect to obtain the greatest possible return from his training and experience. As the *Lilly Digest* points out, it is also probable that the necessarily high standards and professional pride in a busy prescription laboratory have a very decided tendency to put the rest of the pharmacy's departments on the same high plane. The survey sup-

TABLE 2—RATIO OF PRESCRIPTION SALES-DOLLAR TO EACH DOLLAR INVESTED IN PRESCRIPTION STOCK, ACCORDING TO NUMBER OF PRESCRIPTIONS FILLED

STORES COMPOUNDING:

	1940	1941	1942	1943	1944	1945
1 to 5 prescriptions daily.....	\$1.11	\$1.29	\$1.43	\$1.41	\$1.25	\$1.50
5 to 10 prescriptions daily.....	2.13	2.28	2.34	2.32	2.32	2.75
10 to 20 prescriptions daily.....	2.84	3.16	2.86	3.14	3.07	3.92
20 to 40 prescriptions daily.....	3.60	4.04	3.89	4.44	4.03	5.12
40 up prescriptions daily.....	4.49	4.37	4.08	5.80	5.04	7.09
Average.....	2.80	3.10	3.12	3.53	3.47	4.53

TABLE 3—AVERAGE NET PROFIT PER DOLLAR INVESTED IN ALL MERCHANDISE STOCKED IN RELATION TO PRESCRIPTION VOLUME

STORES COMPOUNDING:

	1940	1941	1942	1943	1944	1945
1 to 5 prescriptions daily.....	21¢	32¢	43¢	52¢	56¢	51¢
5 to 10 prescriptions daily.....	27¢	34¢	45¢	56¢	56¢	56¢
10 to 20 prescriptions daily.....	36¢	46¢	51¢	70¢	62¢	54¢
20 to 40 prescriptions daily.....	43¢	43¢	57¢	69¢	75¢	75¢
40 up prescriptions daily.....	27¢	25¢	50¢	\$1.02	75¢	71¢

plies evidence to support these assumptions as shown in Table 3.

The over-all sales in pharmacies in 1945, including all departments, was 18.6% higher than in 1944, or an average of \$62,038. In 1932 average sales were only \$24,454, and in 1942 were \$40,514. The 1945 sales figures, and other data given below, are averages from 1037 pharmacies reporting, including the 677 pharmacies which supplied detailed information on prescription department activities previously discussed.

When sales are rising in a pharmacy, profits are likely to go up at even a more rapid rate. No

such thing happened in 1945. Expenses increased 22.6% over 1944 as against the increase in sales of 18.6%. This resulted in a slight decrease in the rate of profit.

Another disturbing factor was the increase in merchandise stock reported. The average value of all stock per pharmacy was \$9459, or 50% above the 1943 total. This increase in stock during the past three years has resulted in a slowly declining average annual rate of turnover.

Increases in sales ordinarily do not call for increases of the same proportions in merchandise stock. The increases in stock in the past three

TABLE 4—AVERAGE COSTS AND PROFITS OF PHARMACIES IN 1945 AND 1944

	1945	1944
Sales	\$62,038—100.0%	\$52,297—100.0%
Cost of goods sold	41,565—67.0%	35,283—67.5%
Gross Margin	\$20,473—33.0%	\$17,014—32.5%
Expenses:		
Proprietor's or manager's salary	\$4342—7.0%	\$4182—8.0%
Employees' wages	5273—8.5%	3660—7.0%
Rent	1860—3.0%	1308—2.5%
Heat	245—0.4%	215—0.4%
Light and power	372—0.6%	260—0.5%
Taxes (except on building, income, and profit) and licenses	498—0.8%	425—0.8%
Insurance	195—0.3%	157—0.3%
Interest paid	61—0.1%	52—0.1%
Repairs	253—0.4%	155—0.3%
Delivery	64—0.1%	55—0.1%
Advertising	311—0.5%	262—0.5%
Miscellaneous	684—1.1%	702—1.3%
Estimated total depreciation except on buildings	251—0.4%	265—0.5%
Bad debts charged off	59—0.1%	55—0.1%
Telephone	128—0.2%	156—0.3%
Total Expenses	\$14,596—23.5%	\$11,909—22.7%
Net Profit	\$ 5,877—9.5%	\$ 5,105—9.8%
Value at cost of merchandise stock	\$ 9,459	\$ 7,926
Annual rate of turnover of merchandise stock	4.4 times	4.5 times

TABLE 5—COMPARISON, BY SIZE OF PHARMACY, OF NET PROFITS EARNED IN 1945 IN 1037 PHARMACIES

	UNDER \$10,000	\$10,000 TO \$20,000	\$20,000 TO \$30,000	\$30,000 TO \$50,000	\$50,000 TO \$100,000	OVER \$100,000
NUMBER OF PHARMACIES OF EACH SIZE	15	55	144	305	372	146
Operating at a loss.....	20%	5%	5%	3%	3%	2%
Net profit less than 2% of sales.....	13%	11%	8%	7%	6%	6%
Net profit 2% to 4%.....	20%	10%	14%	12%	13%	21%
Net profit 5% to 9%.....	13%	21%	31%	30%	30%	36%
Net profit 10% and over.....	34%	53%	42%	48%	48%	35%

years are probably the result of buying for more than current needs and may even reflect some speculative buying.

The profit rate of 9.5% shown in Table 4 is the average for all 1037 pharmacies included in the report. An analysis by size of store (Table 5) shows that profits of this amount were the general rule in pharmacies of virtually every size, with the outstanding exception of those with sales under \$10,000 annually. The general inability of small pharmacies to make a satisfactory profit in an unusual year such as 1945 illustrates the vital necessity of choosing a suitable location. This is no consolation to the owner who has all of his capital tied up in a hopelessly unprofitable location.

Under present conditions most of these owners would be better off if they abandoned their phar-

macies and started again where conditions were better, the *Lilly Digest* concludes. In many instances they would do better at the present time working as employee pharmacists.

Other pharmacies are handicapped by the unwarranted increase in merchandise stock. High average gross margins which may result from quantity buying do not necessarily result in high average net profits per dollar of sales. The upward trend in net profit per dollar invested, as the rate of turnover increases, has been demonstrated by the Lilly study* all through the war years. It appeared also in the prewar years. It is convincing evidence of the correctness of buying only for current needs.

* Copies of the complete *Lilly Digest* for 1945 may be obtained on request from Eli Lilly and Company, Indianapolis 6, Ind.

TYPHOID RESPONDS TO BACTERIOPHAGE

Type specific bacteriophage, a virus-like agent, offers a promising and safe procedure for treatment of typhoid fever, according to a preliminary report from the Los Angeles County General Hospital. In a series of 56 patients the mortality was 5%. For many years the death rate has been about 10%.

It is reported that bacteriophage, considered a parasite of bacteria, has been used for the past ten years in the Los Angeles hospital for treatment of patients whose *Eberthella typhosa* organisms could be typed. The number of bacteriophages is legion but each differs in its ability to attack certain types of bacteria. Each patient was given the specific phage which would attack his own organisms.

The following results were immediately noted: (1) negative blood cultures twenty-four hours af-

ter treatment, (2) absence of fever, (3) immediate clinical improvement.

The specific bacteriophage in a dextrose solution was administered by intravenous drip over a period of four to seven hours. This was usually followed by a moderate chill lasting approximately thirty minutes. After the chill the physicians noted that the temperature began to mount and reached a peak of 105° to 107° F. within three to six hours. The temperature returned to normal within 9½ to 24 hours after treatment was started and in most instances remained normal.

Five physicians associated with the Los Angeles County General Hospital reported the clinical study: Evelynne G. Knouf, Walter E. Ward, Paul A. Reichle, A. G. Bower, and Paul M. Hamilton.

The Hospital Pharmacist

SURVEYING THE SURVEY

by LEO. F. GODLEY

AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

THE Pharmaceutical Survey, a long-range, nation-wide study of pharmacy to be conducted by the American Council on Education, has begun to break ground. Dr. Edward C. Elliott, director of the Survey, was very much in evidence at the recent A. PH. A. convention and spoke at several sessions, including a joint meeting of the American Society of Hospital Pharmacists and the American College of Apothecaries. It was readily apparent that his energy, incisiveness and capability are what such a movement must have to succeed.

It was also apparent that pharmacists found it difficult to face some of the demands and implications of his questions. But he gave fair warning that he will not be satisfied with half truths and stereotyped answers. As he walked from the meeting room, he left a friendly and welcome challenge: "The hospital pharmacists haven't heard the last of me yet."

With such a movement in progress—a movement which may mark a time from which succeeding annals of pharmacy will be reckoned—hospital pharmacy must be ready to offer full cooperation and to record its voice in the data gathered by the Survey. On the Survey's advisory committee we are well represented by Donald A. Clarke of the New York Hospital.

The results of the Survey will have, potentially, a far-reaching importance. Their ultimate significance will of course depend upon the extent to which we shall act upon them. It may be well to review some of the Survey's aims and examine their implications for hospital pharmacy.

One of the first studies will pertain to the practices of pharmacy colleges as to the selection, admission, guidance and training of students. From current reports it may be assumed that

many schools have applications for admission far exceeding the teaching facilities. We favor selective admission as a logical means of helping assure the caliber of hospital pharmacist—or any other kind of pharmacist—needed to supply our health services adequately.

Eventual policies in regard to student selection, admission and guidance undoubtedly will be influenced by conclusions from another phase of the Survey study: supply and demand for trained pharmacists. As far as institutional pharmacies are concerned, it should become obvious that there are far too few pharmacists who are properly trained, and equally few available for this training. The dearth is evidenced in all localities and it is becoming more dire as hospitals increase their bed capacity, as new hospitals are built, as state boards of pharmacy extend the pharmacy law to include hospital pharmacies, and as governmental branches become more pharmacy conscious.

Better vocational guidance would no doubt help those students inclined toward the hospital type of practice to crystallize their thinking and to make professional plans leading to hospital pharmacy. That more students do not become interested in hospital pharmacy may lie to some extent at the door of present discriminatory regulations against full credit for hospital pharmacy experience in meeting licensure requirements. Thus a number of students who might otherwise gain experience and interest in hospital practice can logically be expected to obtain their "intern" training in the retail pharmacy which will be honored by state pharmacy boards.

Fortunately the relation of requirements for licensure to the training program and practical

needs will also be studied by the Pharmaceutical Survey. An exploration of this subject could be expected to demonstrate that hospital training actually equips the intern pharmacist in excess of legal requirements, even though such training is recognized by only a few state boards.

We look forward to the Survey focusing attention on the state boards, particularly in regard to licensing examinations. They are notorious, in our opinion, for inadequately measuring the qualities of the modern pharmacist. The writer speaks from first-hand as well as second-hand knowledge, having had occasion to become licensed by examination in three different states. We can truthfully say that the examinations were all inadequate in scope, in representation, and in timeliness.

In turning to an examination of qualifications of faculty members and conditions of faculty service in pharmacy colleges, the Survey will, we hope, make some evaluation of how well education meets our practical needs. It is our personal feeling that at least a greater part of a faculty should actively engage in professional practice from time to time—without sacrificing academic achievement. How, indeed, could a teacher instruct in hospital pharmacy unless he is or has been actively engaged in hospital work.

The Survey will also give attention to methods and means of training the type of pharmacist now required for rapidly growing pharmaceutical industries and for pharmaceutical research. Most hospital pharmacists would probably agree that basically the requirements for all branches of the profession are equal at the undergraduate level. We would like to see consideration given to: (1) more uniformity of curricula in schools, after careful study to delete outmoded material and to add new and necessary teaching aids; (2) addition of another year to the undergraduate program to meet today's needs, and of course the development of a strong postgraduate program for specialization; (3) establishment of facilities to bring out the pharmaceutical interests and capabilities of the student. Failing to do so we should resort to the humane and kindly act of encouraging the student to pursue a more agreeable line of university study.

Of particular interest to practicing pharmacists will be the Survey's analysis of prescriptions to determine the professional knowledge necessary for today's pharmacist. A survey of the prescriptions in a hospital's out-patient and in-patient files should inform the Survey workers adequately as to the scope of the technical knowledge in pharmacology, physiology, chemis-

try, and bacteriology that the hospital pharmacist should command. We welcome such a survey. We believe that a study of hospital practice will show a type of pharmacy that fulfills the objectives of pharmaceutical education. In fact we can show a brand of pharmacy that proves some undergraduate pharmaceutical education inadequate.

We look forward to the Survey's report on these and other phases of present-day pharmacy. Editorial opinion and introspection will give way to impartial and objective conclusions that we hope will lead to united action by the profession, no matter how unpleasant or difficult the corrective measures appear.

CHAIRMAN OF THE A.S.H.P.



HANS S. HANSEN

HANS S. HANSEN, chief pharmacist at Grant Hospital, Chicago, has been installed as the new chairman of the American Society of Hospital Pharmacists, an A. P. H. A. affiliate. To the leadership of the youthful Society he brings a mature and broad

background covering three decades of experience in various branches of the profession.

Born in Iowa of Danish parents, Hans developed an early interest in the health professions under the guidance of his father, a Lutheran minister turned physician—a man who ministered to the ills of Cedar Falls citizens during the last forty years of his life.

With this environment, it was natural that the son should have entered Northwestern University School of Pharmacy, graduating in 1913. Following sixteen years of retail practice in Iowa, Mr. Hansen became a pharmaceutical manufacturer's representative in Wisconsin, from whence he entered hospital practice.

As pharmacist at Grant Hospital for the past eight years, Mr. Hansen has contributed a number of articles to the professional literature and recently served on the faculty of the first Institute of Hospital Pharmacy. He is a member of the AMERICAN PHARMACEUTICAL ASSOCIATION, as well as the American Society of Hospital Pharmacists, and served the latter organization during the past year as chairman of the organization committee.

MIDWEST HOSPITAL PHARMACY

by WILMA K. MAUS, Chief Pharmacist

MERCY HOSPITAL, COUNCIL BLUFFS, IOWA

NINE years ago a small group of hospital pharmacists, mainly from Omaha, Lincoln and Council Bluffs, met and organized the "Hospital Pharmacists of the Midwest." Though still a small group, its members have found it of increasing value through exchange of ideas and favorite formulas and discussion of mutual problems. Possibly the greatest advantage arising from the organization has been heightened morale of the individual pharmacists and inspiration to improve pharmacy service in their respective hospitals. Having recognized the benefits of organized pharmacy, the Hospital Pharmacists of the Midwest was one of the first groups to affiliate with the American Society of Hospital Pharmacists.

Because our organization is small, it has been difficult to complete some of the projects undertaken; however, our aims are essentially the same as those of the American Society of Hospital Pharmacists. Among the present projects of the organization is the promulgation of a set of minimum standards for hospital pharmacies intended for midwest institutions that do not offer internships. By introducing these standards it is hoped that hospital administrators will realize the extent of services possible through the pharmacy and will give their pharmacists the opportunity to utilize fully their training and ability. Thus, it is the aim of Hospital Pharmacists of the Midwest to give this area improved pharmacy service in its hospitals and to give hospital pharmacists increased professional recognition in their work.

Encouraging employment of a full-time pharmacist in hospitals is another aim of the organization. By publicizing the fact that an expert is required to insure economical management in the purchasing, storage and handling of drugs and to provide the patient with proper pharmaceutical service, we hope that even the small hospitals in this area will be stimulated to employ a full-time pharmacist.

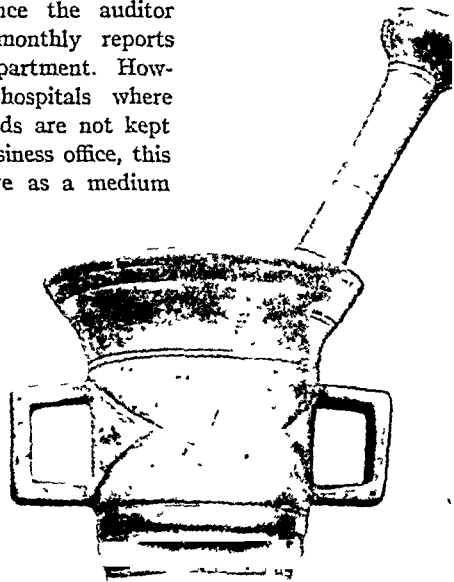
Our hospital, with a capacity of 150 beds, might be considered typical of the twelve hospitals whose pharmacists are members of the Hospital Pharmacists of the Midwest.

Mercy Hospital is a general hospital operated by the Sisters of Mercy. More than 4000 prescriptions are filled each month for the hospital-

ized patients by one pharmacist, who is aided by a non-registered assistant. No prescription medications are stocked on the wards and floors except for a small supply of emergency ampuls. Though this practice necessarily increases the amount of work in the pharmacy, it makes it possible to operate efficiently with a smaller inventory than would otherwise be required. Since medications are not issued in any department at a flat rate, this method facilitates accuracy in charges to patients. Also, deterioration and waste of drugs are practically eliminated.

To aid in efficient purchasing, a card index giving date of purchase, manufacturer, amount of purchase and cost of items is maintained. This, coupled with personal contacts with staff physicians, particularly in reference to new or unusual drugs, makes it possible to keep an adequate stock, yet largely eliminates an accumulation of dead items which so frequently results from uncontrolled purchase of drugs for trial use by physicians. By judging from the entries in the index, the trend of demand for particular drugs can be predicted.

In addition to the perpetual narcotic and alcohol inventories, a general financial record is kept. The number of prescriptions filled, the total charges, stock supplied to the various departments, medications for student nurses, and supplies which are sent to other institutions operated by the Mercy Order are recorded daily. This concise record is intended only as a source of information for the pharmacist since the auditor prepares monthly reports on each department. However, in hospitals where such records are not kept by the business office, this could serve as a medium



through which the pharmacist could justify desired improvements in the pharmacy.

Manufacturing can cut down the operating expenses of a hospital pharmacy to a considerable extent, but time is a limiting factor. Since ward and department supplies do not include prescription items in our institution, it has been possible to cut "drug basket days" to four a week. This gives two days which may be devoted to manufacturing.

As an educational center in the hospital, the pharmacy has tried to establish a worth-while library including required and recommended books for hospital pharmacies and two literature files. One is an alphabetized file of drug pamphlets and the other contains articles clipped from various professional journals and the house organs of pharmaceutical manufacturers. These files supply information to the staff on drugs, particularly the newer ones; on techniques, formulas and business management; and augment text material for the pharmacology and chemistry courses taught student nurses by the pharmacist. A carefully cross-indexed card system started a year ago has proved valuable. This eliminates wasting time hunting through old journals for articles and also saves much space which was formerly devoted to storage of journals. Desired information is now quickly available with a great saving in time.

Through the medium of the Hospital Pharmacists of the Midwest various procedures, such as those mentioned, may be discussed, considered for adoption and improved upon in member hospitals having similar requirements. Personal interchange of professional data is one of the advantages of organizational work that benefits the pharmacist, his institution and the patient.



N. J. HOSPITAL PHARMACISTS MEET

At a recent meeting of the New Jersey Society of Hospital Pharmacists held at Rutgers College of Pharmacy, the following officers were elected: Lena Cutler, president; Charles Seal, vice-president; Jennie Cutler, secretary; and Grace Huber, treasurer.

During the meeting Albert W. Moore discussed the constitution and by-laws.

Hospital Queries

CONDUCTED FOR THE JOURNAL

by JOHN J. ZUGICH

When submitting professional problems please give pertinent details. Inquiries receive personal replies, from which subjects of general interest are selected for discussion in this column. Address correspondence to the Journal, 2215 Constitution Ave., N. W. Washington 7, D. C. This service covers all phases of hospital pharmacy practice, although prescription inquiries are referred to the "Prescription Information Service" department.

WATER PURIFICATION

We need information on a unit to supply water comparable to distilled water to replace a poorly functioning still in our pharmacy. Some literature has mentioned the use of resins for water purification. Do you know the source of such units?

We believe you refer to the use of ion-exchange resins. It must be remembered that units supplying this mineral-free water do not supply a product sufficiently pure for parenteral use. Two sources of such units are: Illinois Water Treatment Co., Rockford, Ill., and the Barnstead Still and Sterilizer Co., Inc., 2 Lanesville Terrace, Forest Hills, Boston 31. The former lists the unit as a "deionizer," the latter as a "demineralizer."

SQUARE FEET PER HOSPITAL BED

Our drug room floor space is to be expanded with new construction which will give our hospital 410 beds. At present the hospital has 250 beds and the drug room has 635 square feet of space. How many square feet might be requested for the new unit?

Hospital architects have set "rule-of-thumb" space allotments for various hospital departments. A measure at the moment is five square feet per hospital bed as answering basic requirements for the pharmacy. If manufacturing in quantity or preparation of bulk intravenous fluids is planned, the footage might be increased to 10 square feet per hospital bed. For your new 410-bed institution, the pharmacy might occupy at least 2050 square feet.

Your use of the term "drug room" prompts a word on a disappearing name. It should be dropped as soon as feasible since it is considered

outmoded for obvious reasons. The term "pharmacy" is a much better designation.

GIFT SHOP IN PHARMACY?

I serve an institution associated with a university medical center on the outskirts of a large city of 750,000. Overnight accommodations to relatives and visitors of patients are to be offered in a new building being planned, since it is several miles to any shopping or hotel accommodations. The administrator plans to offer a "convenience" service to these persons by having a drug sundry and gift shop in the building, not to include any prescription work. As chief pharmacist, what would be the proper attitude on this "extra-curricular" activity of the hospital pharmacy?

It would be advisable to convince the administrator that this is not an activity within hospital pharmacy practice, because even though its location is far removed from commercial enterprises it may indirectly compete with them. It could be operated on a concession basis by a qualified local concern; or it could be managed by some charitable organization with volunteers as workers. The profits accrued in the latter instance would be given to the institution and distributed much as "Community Chest" appropriations. One large hospital distributes profits of such an enterprise to a "Crippled Children's Fund." Although the exact scope of the proposed shop is not clear, it seems to have so little relation to pharmacy that it might just as logically be placed under surgery or any of the other departments.

A TEXT IN HOSPITAL PHARMACY

Is there a text on hospital pharmacy available? What schools offer courses leading to a major in hospital pharmacy?

There is no complete text on hospital pharmacy available at this writing. Remington's *Practice of Pharmacy* has an excellent section devoted to hospital pharmacy which will be expanded in a forthcoming edition.

At the undergraduate level, there are no courses in hospital pharmacy beyond that of an elective. Several colleges of pharmacy are beginning preliminary surveys to determine the demand for expanded programs in this field. At least one college now offers graduate work in hospital pharmacy and others are giving attention to this need. Facilities are also being developed to integrate academic training with hospital pharmacy experience, or internships, in affiliated hospitals.

ADR

DENTAL REMEDIES RECENTLY ACCEPTED BY
A. D. A. COUNCIL ON DENTAL THERAPEUTICS

ANTISEPTICS AND ANTIBIOTICS¹

Zephiran Chloride Solution 1:1,000: Zephiran chloride, 0.1 per cent; water, 99.9 per cent.

Zephiran Chloride Stainless Tincture 1:1,000: Zephiran chloride, 0.1 per cent; alcohol, 50 per cent; acetone, 10 per cent; water, 39.9 per cent.

Zephiran Chloride Tinted Tincture 1:1,000: Zephiran chloride, 0.1 per cent; alcohol, 50 per cent; acetone, 10 per cent; color and water, 39.9 per cent.

Zephiran Chloride Aqueous Solution 12.8%: Zephiran chloride, 12.8 per cent; water, 87.2 per cent. (This is a concentrated dosage form, intended for dilution with distilled water or other suitable solvent or mixture to produce the other accepted dosage forms of zephiran chloride. It is the most economical form in which to buy zephiran chloride if large quantities are to be used.)

Distributed by WINTHROP CHEMICAL CO., INC., New York.

Penicillin Troches, Abbott.—Each troche is stated to contain tragacanth, powder, 42.6 mg.; acacia, powder, 42.6 mg.; sodium carboxymethylcellulose, 19.0 mg.; sugar, powder, 745 mg.; penicillin calcium, 1000 units; flavor (creme de menthe), 0.66 mg.; magnesium stearate, 2.56 mg.

Indications: Penicillin troches are indicated as an adjunct in acute ulceromembranous gingivitis (Vincent's infection). They are contraindicated in cases demonstrating local sensitivity to the drug.

Local Effects, Systemic Toxicity and Actions: See "Penicillin," *Accepted Dental Remedies*, Ed. 12, p. 103.

Dosage: The dosage for penicillin troches according to Keefer et al. is as follows: Allow one troche to dissolve in the mouth. Repeat two or three times a day between meals.

Penicillin troches should be allowed to dissolve in the mouth as slowly as possible. This may be accomplished by placing them one at a time in the space between the cheek and the molar teeth, where they should be left undisturbed by the tongue.

In view of the fact that treatment of Vincent's infection with troches is in a somewhat experimental stage, a more intensive dosage might be desired. The most effective action will probably be obtained by keeping a troche in the mouth constantly during the waking hours, and placing one *in situ* just before going to sleep. The patient should be instructed that, if he awakens at night, he should place a fresh troche in his mouth before he goes to sleep.

Manufactured by ABBOTT LABORATORIES,

¹ *Accepted Dental Remedies*, Ed. 12, p. 72

PRODUCTS RECENTLY ACCEPTED BY THE
A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY

Council descriptions of drug products are published regularly in *This Journal* as they are accepted. Rules upon which the Council bases its action appeared in the July, 1946, issue (7:320, 1946) and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago.

SOLUTION OF EPINEPHRINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 292).

The following dosage form has been accepted:
BARRY BIOLOGICAL LABORATORY, DIVISION OF
BARRY ALLERGY LABORATORIES, INC., DETROIT

Solution Epinephrine Hydrochloride 1:1000: 30-cc. vials. Each cubic centimeter contains epinephrine U. S. P. 1 mg. in isotonic solution of sodium chloride with chlorobutanol 0.5 per cent and sodium bisulfite 0.1 per cent as preservatives.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1945, p. 202).

The following additional dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Sterile Sulfathiazole: 5.0-Gm. sterilopes.

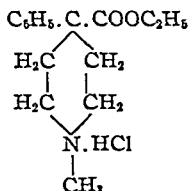
EPHEDRINE SULFATE (See New and Nonofficial Remedies, 1945, p. 285).

The following dosage form has been accepted:

WILLIAM H. RORER, INC., PHILADELPHIA

Solution Ephedrine Sulfate: 50 mg. in 1 cc. ampuls.

DEMEROL HYDROCHLORIDE.—Meperidine hydrochloride.—Isonipocaine.—Ethyl-1-methyl-4-phenylpiperidine-4-carboxylate hydrochloride.—M. W. 283.79.



The base ethylmethylphenylpiperidine carboxylate may be obtained by combining dichlorodiethylmethylamine with benzylcyanide and subsequent esterification; this is converted to the hydrochloride.

Actions and Uses.—Demerol hydrochloride possesses a minor atropine effect and predominant

morphine-like analgesic properties. It is capable of depressing the cardiac vagus of the anesthetized animal to the point where faradic stimulation fails to elicit any cardiac effect. Such responses are reversible.

The spasmolytic action of Demerol hydrochloride is due in part to depression of the parasympathetic endings but is primarily the result of a direct papaverine-like depression of the muscle fiber.

Therapeutic doses produce a slight sedative and a decided analgesic action. Unlike morphine, Demerol hydrochloride is not a potent hypnotic. In man the analgesic effect of Demerol hydrochloride appears to lie between that of morphine and codeine and persists for from five to six hours.

Although it has not been possible to demonstrate the development of physiologic dependence to Demerol in animals, the drug does possess a moderate degree of addiction liability. The development of tolerance to the drug has been demonstrated in man, and it has been shown that Demerol may be substituted for morphine in addicted individuals with prevention of the morphine withdrawal syndrome. Furthermore, mild withdrawal symptoms have been observed in susceptible individuals purposely addicted to the drug.

The possibility of development of psychic dependence to Demerol must also be kept in mind, since the drug will produce a euphoria in some individuals which lasts for an hour or more, depending on the dose.

Demerol hydrochloride is indicated for the alleviation of pain, particularly pain of spastic origin, and in the majority of conditions in which morphine or other opium alkaloids are generally employed. In obstetrics it may be used to lessen the severity of labor pains and, in conjunction with barbiturates, to produce obstetric amnesia.

Dosage.—For most medical and surgical conditions the average adult dose of Demerol hydrochloride is 0.1 Gm., administered either intramuscularly or orally. In some patients pain is controlled by as little as 50 mg. Others suffering from severe pain require 0.15 Gm. For the production of analgesia in obstetrics, 0.1 Gm. is given intramuscularly as soon as contractions occur at regular intervals. If labor is rapid or if the cervix is thin and dilated (2 to 3 cm. or more) the second dose may be given as soon as one-half hour after the first one. A third dose may be necessary an hour or two later, depending on progress.

If the production of amnesia is desired, one of the barbiturates may be given when the cervix is dilated 4 or 5 cm. or when the third dose of Demerol hydrochloride is administered. In the majority of cases this procedure will insure adequate amnesia for from four to six hours. When barbiturates are used with Demerol hydrochloride for this purpose they are effective in considerably smaller doses than when used alone.

Tests and Standards.—

Demerol hydrochloride occurs as a fine, white crystalline, odorless powder; stable in the air at ordinary temperature;

soluble in water, acetone and ethyl acetate; slightly soluble in ethanol and isopropanol; insoluble in benzene and ether. Its aqueous solution (1 in 10) is acid to litmus. Demerol hydrochloride melts at 186 to 189° C. Aqueous alkali carbonates and hydroxides precipitate the free base as a water-white to a pale yellowish solid.

For tests and standards see *J. Am. Med. Assoc.*, 132:147 (1946).

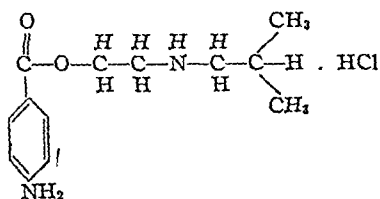
WINTHROP CHEMICAL CO., INC., NEW YORK

Solution Demerol Hydrochloride, 50 mg. per cc.: 2-cc. ampuls.

Tablets Demerol Hydrochloride: 50 mg.

U. S. patent 2,167,351 (July 25, 1939; expires 1956). U. S. trademark 281,130.

MONOCAINE HYDROCHLORIDE.—2-Isobutylaminoethyl *p*-aminobenzoate hydrochloride.—2-*p*-Aminobenzoxy- *N*-isobutyl-ethylamine hydrochloride.—The hydrochloride of the ester formed from *p*-aminobenzoic acid and *N*-isobutyl ethanolamine.— $C_{17}H_{21}ClN_2O_2$.—M. W. 272.78.



Actions and Uses.—Monocaine hydrochloride is a local anesthetic similar to procaine hydrochloride. It is used for nerve block anesthesia in dentistry or other surgical operations. Present evidence does not warrant recommendation for its use for topical or surface anesthesia of mucous or other membranes. Its effects, either with or without the addition of epinephrine hydrochloride, are qualitatively identical in every respect with those of procaine. Quantitatively, monocaine has been shown to have about one-third more anesthetic and toxic potency than procaine (i. e., monocaine solutions of three-fourths the concentration of procaine solutions are approximately equivalent).

Dosage.—For dental or other minor surgery, a 1 per cent solution with epinephrine 1:75,000 may be injected to obtain nerve block anesthesia. In major surgery or other procedures requiring nerve block anesthesia equivalent to that produced by 2 per cent procaine, a 1.5 per cent solution of monocaine with epinephrine 1:100,000 may be used. (See caution under the general article Local Anesthetics.)

Tests and Standards.—

Monocaine hydrochloride occurs as a white, odorless, crystalline powder possessing a bitter taste and anesthetizing effects. It melts within the range 192–196° C. It is sparingly soluble in water, slightly soluble in alcohol and chloroform, very slightly soluble in benzene and practically insoluble in ether. The pH of a 1 per cent aqueous solution is about 4.7.

For tests and standards see *J. Am. Med. Assoc.*, 132:147 (1946).

NOVOCOL CHEMICAL MFG. CO., INC., BROOKLYN

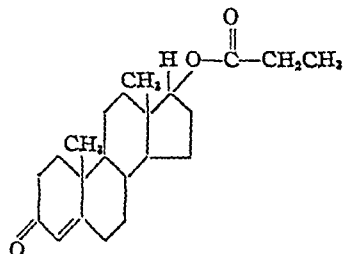
Monocaine Hydrochloride Solution 1% with Epinephrine 1:75,000: 1-cc., 2-cc., 3-cc. and 5-cc. ampuls; 1-cc., 2-cc., 2.5-cc. and 5-cc. Anestubes (syringe cartridge); 2½-cc. and 5-cc. Novampuls (ampul type syringe); and 30-cc., 60-cc. and 120-cc.

bottles. Each cubic centimeter contains monocaine hydrochloride 10 mg., epinephrine U. S. P. 0.013 mg., sodium bisulfite 2.0 mg. and sodium chloride 6.5 mg. in sterile distilled water.

Monocaine Hydrochloride Solution 1½% with Epinephrine 1:100,000: 1-cc., 2-cc., 3-cc. and 5-cc. ampuls; 1-cc., 2-cc., 2½-cc. and 5-cc. Anestubes (syringe cartridge); 2½-cc. and 5-cc. Novampuls (ampul type syringe); and 30-cc., 60-cc. and 120-cc. bottles. Each cubic centimeter contains monocaine hydrochloride 15 mg., epinephrine U. S. P. 0.01 mg., sodium bisulfite 2.0 mg. and sodium chloride 4.5 mg. in sterile distilled water.

U. S. patent 2,139,818 (Dec. 13, 1938; expires 1955). U. S. trademark 353,653.

TESTOSTERONE PROPIONATE.—The propionic acid ester of testosterone.— Δ^4 -androst-17(α)-propionate-3-one.— $C_{22}H_{32}O_3$.—M. W. 344.48. —Testosterone propionate possesses androgenic properties. It may be prepared synthetically from cholesterol as the starting material or from testosterone isolated from bull testes. The structural formula of testosterone propionate may be represented as follows:



Actions and Uses.—Testosterone propionate is primarily useful to supply testicular hormone for the treatment of deficiency or absence of this internal secretion of the male. It may therefore be of value in the treatment of prepuberal and postpuberal eunuchoidism or hypogonadism (deficiency states) and in postcastration and eunuchism (absence of testicles). In the latter instances treatment must be regarded as replacement therapy and is of benefit only as long as it is continued.

Its use in eunuchoidism is intended to promote prepuberal development of primary and secondary sexual characteristics or to relieve postpuberal constitutional symptoms attributable to deficient secretion. In the treatment of constitutional symptoms in young males it should be borne in mind that less is usually needed to obtain relief than the amount required to promote pubescence and development of infantile genitalia, and that it is unwise to stimulate full sexual maturity in youths who are psychologically and otherwise physically unprepared for adult life. In eunuchoidism not due to primary testicular hypoplasia, efforts to eliminate secondary etiologic factors should take precedence over the use of androgens.

In adults, hypogonadism (functional deficiency) manifested by constitutional symptoms and effemini-

nacy without striking anatomic changes, symptomatic improvement may follow androgenic therapy. Atrophy of accessory male structures that follows castration or is associated with eunuchism may also be effectively prevented or these organs restored to normal and maintained by continuous therapy.

The use of androgens in the treatment of other conditions such as cryptorchism, the "male climacteric," angina pectoris, ovarian dysfunction (functional uterine bleeding), dysmenorrhea and other gynecologic conditions is experimental and cannot be recognized until more conclusive evidence becomes available.

Dosage.—Testosterone propionate is administered intramuscularly in doses ranging from 5 to 50 mg. from two to six times weekly, depending on the response obtained. To induce pubescence in eunuchoidism, 10 mg., increased as indicated to 25 mg. three times weekly, may be employed over a period of several weeks. To relieve constitutional symptoms as little as 5 mg. at similar intervals may be sufficient. Depending on the condition and the effect desired, the maintenance dose must be determined in each individual case. Priapism is indicative of excessive dosage, and its production is an indication for temporary withdrawal of the drug. Caution is also necessary to avoid precocious sexual development in young boys. Its indiscriminate use should be guarded against, since the drug may produce irreversible masculinizing phenomena in the female. Testosterone propionate has a standard potency of 50 international capon units per milligram and is usually dissolved in oil for intramuscular injection.

Tests and Standards.—

Testosterone propionate occurs as an odorless, white to pale yellow, crystalline powder. It is insoluble in water but soluble in organic solvents such as alcohol, chloroform and ether; it may be dissolved in vegetable oils. Testosterone propionate melts between 118 and 122° C.

For tests and standards see *Jour. Am. Med. Assoc.*, 132: 213 (1946).

RARE CHEMICALS, INC., HARRISON, N. J.

Testosterone Propionate in Oil: 1-cc. ampuls of 5 mg. per cubic centimeter, 10 mg. per cubic centimeter and 25 mg. per cubic centimeter, equivalent to 250, 500 and 1250 international capon units per cubic centimeter, respectively, in sesame oil.

CABASIL: QUACKERY UNLIMITED

(Based on a Report of the Council)

The proprietary, Cabasil (Cabasil, Inc., 800 Bankers Security Bldg., Philadelphia), has been marketed in a variety of dosage forms: oral, enema, rectal ointment, suppository (rectal and vaginal) powder, nose and throat powder, surgical powder, concentrate fluid, implants ("seeds"), ointment (mild), concentrate ointment (strong), foot powder and special forms such as capsules for prevention of water-borne infection.

It is not known whether all forms have the same composition, but in 1945 the laboratory of the American Medical Association reported that a

sample of Cabasil powder consisted "essentially of a mixture of magnesium oxide, magnesium hydroxide and barium sulfate, together with a small amount of organic substances such as iodoform."

The sources of distribution of Cabasil appear to stem primarily from the promotional interest of Dr. Stuart Kabnick, a practicing dentist of 326 S. 21st St., Philadelphia, whose previous activities have also been the subject of critical comment by the Council on Pharmacy and Chemistry. Early in the war letters to one organization from Dr. Kabnick bore the address 21st and Delancey Sts., Philadelphia, the same as that attributed to the "Pennsylvania Institute of Chemurgic Therapology," used as a caption for a mimeographed leaflet promoting Cabasil and its claimed mode of action in inflammatory processes. Apparently this institution serves as an advertising outlet for the "research" activities of Dr. Kabnick.

During the war Dr. Kabnick made some effort to interest a research organization engaged in war work in Cabasil, principally for use by the armed forces in the treatment of battle casualties, but he refused to reveal the composition. Because of considerable political pressure, the research organization asked a group of consultants to review the claims made by Dr. Kabnick for use of the preparation in wounds and burns. After a preliminary investigation this group concluded that the claims were supported only with inaccurate testimonials and that there was no warrant for further investigation of this proprietary remedy to have it recommended to the armed forces.

A mimeographed leaflet on the so-called advantages of the use of Cabasil technique consists of a list of amazing claims for the efficacy and economy of "implants" and "powder" in the treatment of the soldier with infected battle wounds, including osteomyelitis and gangrene, without the use of instrumentation or surgery. One version of the leaflet states that "one Cabasil plant into his bullet wound or wounds immediately after he is wounded, he will require little or no further attention." "The bleeding will be stayed and there will be little or no infection. Most bullet wounds heal with one plant."

Another promotional brochure outlining the forms and indications of Cabasil lists over thirty unrelated conditions, including such diseases as allergy, arthritis, Buerger's disease, colds, colitis, chancroid, dysentery, gangrene, gastroenteritis, osteomyelitis, pneumonia and trichinosis. There are no published reports to substantiate any of the claims made.

The Council condemns the manner in which Cabasil has been exploited to the medical profession and public. In view of Dr. Kabnick's past record in promoting a variety of proprietaries, the Council warns against the possibility that the promoter may proceed along another tangent by adoption of a different name and set of conditions on which to base criteria for his so-called "ideal" disinfectant.

—*J. Am. Med. Assoc.*, 132: 144, 1946

Typical Days

FROM THE SECRETARY'S SEPTEMBER DIARY

—1st—

AFTER completing the story of the Pittsburgh Convention for the JOURNAL with Glenn Sonnedecker, returned by auto over the Pennsylvania Turnpike to Washington in a seven-hour drive broken only by a stop for dinner. A beautiful day, with few on the road and plenty of time to reflect on the events of the previous week.

—2nd—

Labor Day, a holiday, and therefore a good day to be at the desk, for telephone interruptions are few. Glad to welcome Charles H. Evans who dropped by for a chat on the future professional relations program which should get off to a good start after the interest shown at Pittsburgh. Later to Alexandria for a good dinner at the famous "Inn"

—3rd—

Everyone back on the job after the long week-end holiday and ready to pick up where we left off before the convention. New officers, new committees, new thoughts and new suggestions are stimulating to the Headquarters staff and there is plenty of activity to look forward to. During the morning a visit from Mr. and Mrs. Charles Evans on their way back to Georgia. It was a pleasure to show Mrs. Evans, new president of the Women's Auxiliary, the nicely furnished lounge for our women employees. We are very grateful to the Auxiliary for having taken on the financial responsibility for furnishing these quarters. And now in the middle of the afternoon, leaving for Red Bank for a few days of rest after the strenuous convention days, and it was a delightful ride via Belair, Md., where we looked in on Lloyd Richardson. Stopping at Camden, N. J., for dinner, met Dr. Charles E. Vanderkleed, distinguished pharmaceutical chemist who taught us most of what we know about drug control.

—5th—

Today a pleasant automobile trip to Easton where the Mack Printing Co. produces our journals. Quite a reunion to meet so many co-workers of years ago when we labored on the *News Edition of Industrial and Engineering Chemistry* and all looking well with few signs of the passage of time. With Sonnedecker finishing the proof reading and approval of the final pages of the convention report and then returning to Red Bank by way of Trenton, dropping Sonnedecker off for the return to Washington by train.

—10th—

Today a session with the architects about the memorial flagstaff which Dr. Dunning has generously provided for. And it will be a beautiful addition to the Headquarters Building which has seemed isolated on parade days and holidays with no flag unfolding to the breeze.

—12th—

And now a meeting with the Proprietary Association's Secretary Barta and Editor Swain—a subcommittee of the National Drug Trade Conference Committee on Uniform State Pharmacy Laws. It is hoped that some way can be found to avoid the antagonisms of various divisions of the drug industry before committees of the state legislatures when amendments to pharmacy laws are considered which involve regulation of the sale of drugs and medicines. Proprietary medicine manufacturers have for years opposed restrictions of the sale of their products to pharmacies. This is the bone of contention and compromise seems far off at times. Later in the day meeting with the Steering Committee on the Pharmacy Corps legislation where strategy for the expected fight against abolition of the Pharmacy Corps was developed.

—13th—

Among the callers today gladly welcomed Richard Deno who was on a visit to some of pharmacy's nearby historic shrines. He is President of "Friends of Historical Pharmacy" and always a welcome visitor. At the desk until midnight cleaning off accumulated routine matters.

—16th—

On an early train from Red Bank to New York and then catching the 10 o'clock train for Boston, after telephone conversation with Elmer Bobst who is active in the American Cancer Society and will help materially to work out Pharmacy Week observance which is to be dedicated to the cancer control program in 1947. Arriving in Boston at 1:50 p.m.,

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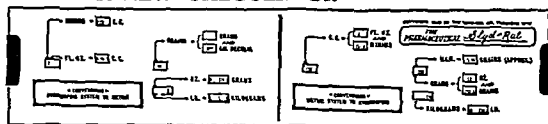
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transferred immediately to the North Station for the afternoon train to Portsmouth, N. H., where the New Hampshire Pharmaceutical Association is in annual convention assembled. Waiting at the station in Portsmouth were Messrs. Callaghan and Smith who whisked us away to the Wentworth Hotel where a comfortable room and all the courtesies of a good hostelry and good hosts were in evidence. And now changing rapidly into "black tie and tux" joined the New Hampshire pharmacists at their annual banquet graced by Governor and Mrs. Dale among other distinguished guests. The honorary membership award this year went to Dean Kendig and we told of the things that lie ahead for the pharmacists of the nation, with George Moulton doing honors as Master of Ceremonies and he always does this well. It was a pleasure to renew friendships with many New Hampshire and Greater New England friends who visit these conventions regularly.

—17th—

After an early breakfast with W. Paul Briggs and Dean and Mrs. Kendig at the same round table, leaving on the morning train for Boston and lucky to get a seat on the noon train for New York which rolled into Grand Central Station on time at 4:35 p. m. After contact with the Washington office by telephone and dinner at the Chemists' Club, to Red Bank for the night.

—18th—

On the early morning train from Red Bank to New York for a conference with John Price Jones and his associates on the Pharmacy Week program as related to the American Cancer Society's public relations activity and then to Washington, arriving in the middle of the afternoon in time to complete the most pressing "new business."

—19th—

Today a session with representatives of the Fine Arts Commission which is charged with approval of all new building construction, including our memorial flagstaff. At night with Justin Powers and George Beal for dinner at the Statler and later to the

office to burn a little midnight oil in an effort to reduce the "unfinished business." The inanimate dictaphone is a great help in this procedure.

—20th—

A profitable lunch hour spent with Justin Powers in discussing publication matters. Later answering questions propounded by the Director of the Pharmaceutical Survey and then a meeting, in our beautiful reading room, of the Executive Committee of the American Social Hygiene Association whose members were inspired and pleased by what they saw of our building and facilities. To dinner at the Statler with the Board of Directors of the A. S. H. A., followed by a spirited and fruitful meeting at which major policies were discussed and determined.

—21st—

All this Saturday working with first one and then another member of the staff who required decisions on this and that including some re-arrangement of offices to provide for new personnel, some re-assignment of duties to take full advantage of the specialized training of those recently added to the staff; also a bit of shopping.

—23rd—24th—25th—

After the week-end at Red Bank, to Atlantic City for the annual convention of the National Wholesale Druggists' Association. A fine turn-out of the drug industry and an excellent program which included such headliners as Elliott, Fishbein, Swain, Weicker, Nolen, Newcomb, and others. Also luncheons and dinner parties galore, and of course "cocktail hours," provided by generous hosts among the manufacturing and wholesale fraternity. Back to Washington on the 25th.

—26th—

On the 7 a. m. train for Philadelphia to meet George Beal for a visit to Sharp and Dohme Laboratories at 11 a. m. Most interesting conversation with President John Zinsser on international health affairs and on the work of the A. Ph. A. Laboratory. After luncheon at the Bellevue-Stratford met Robert Lincoln McNeill, President of McNeill Laboratories



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at the Union League where there was much conversation on the future of A. Ph. A. affairs with special reference to the influence of the Laboratory on the formulation of adequate standards for drugs.

—28th—

Glad to have an opportunity to discuss pharmaceutical affairs in South America with Dr. Goetz who came to confer a "corresponding membership" in the Argentine Pharmaceutical Society upon the Secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION and present a diploma and gold medal in honor of the occasion. This expression of friendship and good will was gratefully accepted on behalf of American pharmacy.

—30th—

A brief visit to the scientific and commercial exhibits of the D. C. Medical Society at the Statler, meeting many medicos of prominence including Drs. L. L. Williams and H. VanZyle Hyde of the U. S. Public Health Service. In the afternoon a visit from Mr. Caemerer, Secretary of the Fine Arts Commission, who inspected the building and especially the site for the memorial flagstaff. And so another month completed.

D. G.

DUNNING PRESENTS PAINTING TO MARK ETHER CENTENNIAL

A feature of the one-hundredth anniversary of the first administration of anesthetic ether, which was celebrated with appropriate ceremonies at the University of Maryland School of Medicine, was the presentation of a painting entitled "The First Administration of Anesthetic Ether" to the Department of Pharmacology by Dr. H. A. B. Dunning, chairman of the Board of Hyson, Westcott and Dunning of Baltimore, Md., former president of the AMERICAN PHARMACEUTICAL ASSOCIATION and now a member of its Council.

Ceremonies incident to this occasion included an address on "Surgery Before Anesthesia" by Dr. Henry E. Sigerist, professor of the history of medicine, Johns Hopkins University; an address on "Dr. W. T. G. Morton and Ether" by Dr. J. Ben Robinson, dean of the School of Dentistry, University of Maryland; and an address "Anesthesia Today and Tomorrow" by Dr. Henry S. Ruth, editor, *Anesthesiology*.

The painting donated by Dr. Dunning was based upon a daguerreotype and was done by Stanley M. Bell. It was unveiled by Constance Black, an anesthetist who has voluntarily subjected herself to the action of several new anesthetics in connection with researches on newer

anesthetic agents under the direction of John C. Krantz, Jr. Dr. Krantz, professor of pharmacology in the School of Medicine, presided at the ceremony.

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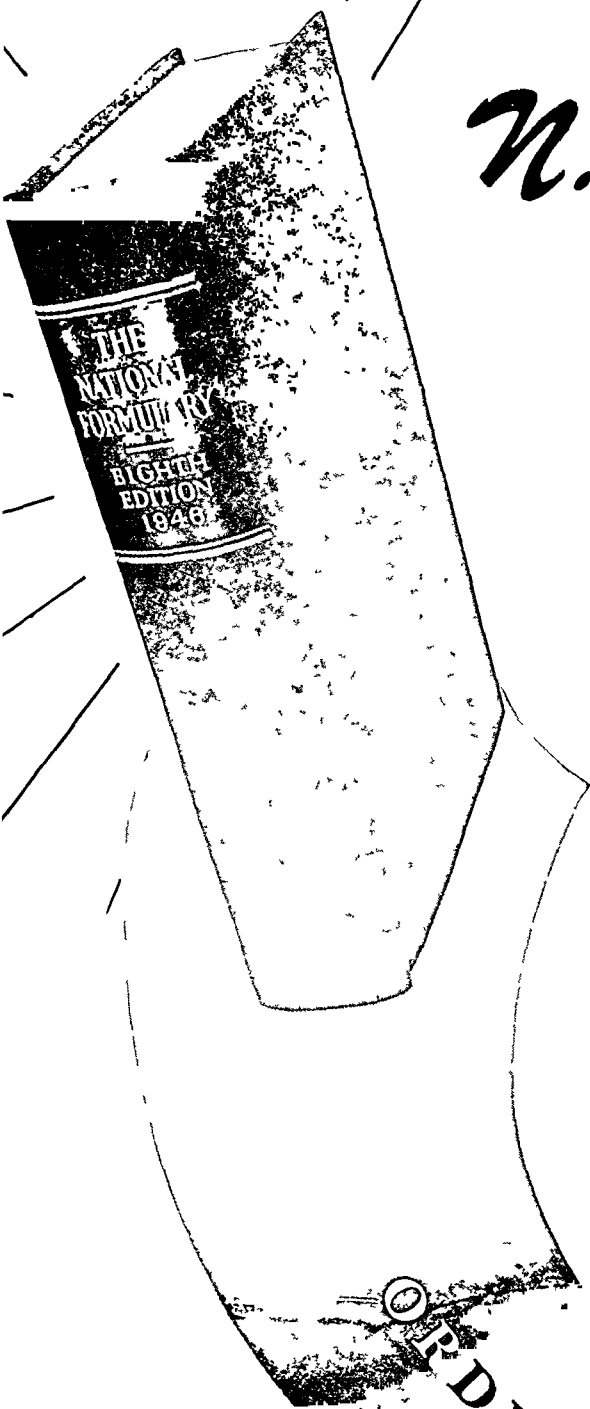
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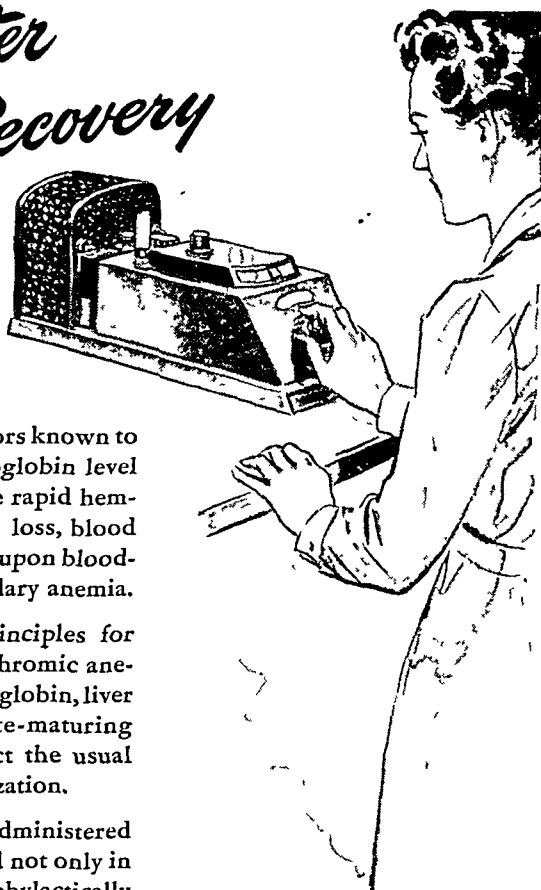
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Paper, Simon, San Francisco
Ransom, Robert J., San Francisco

COLORADO

Williams, George W. O., Denver

CONNECTICUT

Fuller, Horace J., New Haven
Sister Maria Lucia, New Haven

DISTRICT OF COLUMBIA

Henderson, Jean, Washington
Rosenberg, Louis, Washington

GEORGIA

Crump, John D., Macon
Shuman, Roy P., Macon

ILLINOIS

Hewitt, Francis M., Jr., Carbon-
dale
Maher, Frank T., Oak Park
Robbins, Maurice, Calumet City

INDIANA

Kolupa, Ladislaus A., South Bend
Matingley, Victor L., Boonville
Reed, Curtis C., Indianapolis

KANSAS

Arbuthnot, C. J., Lebanon
Hall, George G., Oakley

KENTUCKY

Willmoth, John T., Bellevue

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Bienvenu, R. J., Alexandria
Cronan, Thomas L., Port Allen
Cupp, Vernon C., Ruston

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polis, Ind.
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Uniontown, Pa.

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Santoni, David A., Baltimore

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Gagne, Joseph, Holyoke
Gagne, Mildred G. R., Holyoke
Gagne, Richard Joseph, Holyoke
Hanson, Willard L., Medford
Klugman, Alfred, Allston

MICHIGAN

Bennett, Raymond C., Jr., De-
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Bergstein, Leonard, Midland
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Butts, John H., Lansing
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Durrant, Archer A., St. Clair
Shores
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Gould, Louis, Detroit
Karbal, William H., Detroit
Koprince, Daniel, Detroit
Priest, Gerald L., Allegan
Robson, James R., Allegan
Rykert, Glenn E., Detroit
Schuler, Edward E., Grosse Pointe
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Taylor, William R., Detroit
Wolf, Richard, Grand Rapids
Wood, Thomas, Detroit

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Macho, Kendall B., St. Paul

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MISSOURI

Woodall, William W., St. Louis
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Bourgeois, Elezia, Manchester
Breck, Edward M., Manchester
Clukay, Bertram, Peterborough
Cote, Walter, Manchester
Dawson, Beatrice J., Manchester
Dyer, Raymond, Milford
Gonyer, Louis X., Manchester
Melanson, Raymond, Manchester
Moore, Janet F., Manchester
Morin, Marcelle, Manchester
Mowry, Charles A., Manchester
Nault, J. Albert, Concord
Piersa, Emily, Manchester
Thiem, Charles, Manchester
Trudeau, Leonel J., Manchester

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Rees, John G., Westfield

NEW MEXICO

McCann, Raymond J., Albu-
querque
Rose, E. J., Albuquerque

NEW YORK

Anopol, Annie, New York
Bauer, Charles W., Locust Valley
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James, Harold R., Croton on Hud-
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Mabardie, A. A., Brooklyn
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Graduate of.....Year.....Degrees.....

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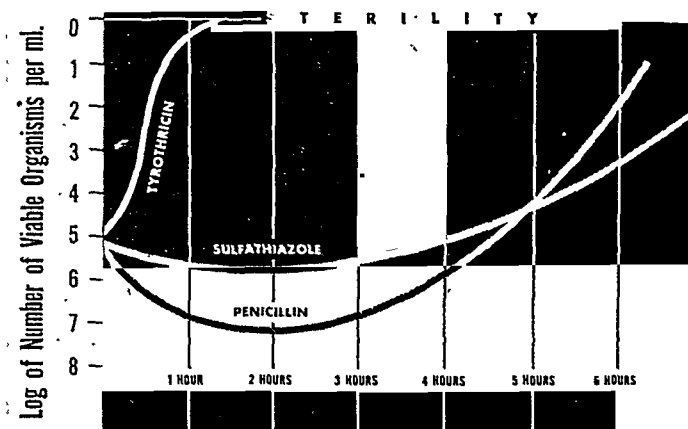
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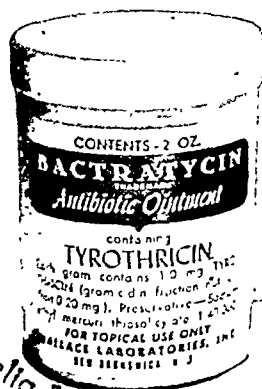
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Journal of the

AMERICAN PHARMACEUTICAL ASSOCIATION

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Practical Pharmacy Edition

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PHARMACY WEEK REFURBISHED

THE announcement that Pharmacy Week will be observed early next spring with an expanded program and stronger backing comes as good news to the thousands of pharmacists interested in this professional program of public relations. With support from the American Cancer Society, the AMERICAN PHARMACEUTICAL ASSOCIATION shifts the emphasis of Pharmacy Week to meet a basic problem of public health education.

In retrospect, past observances seem heavily loaded with a policy of self-admiration by the pharmacist, although a greater demonstration of professional pride could well be manifested by most of us. But much to-do about professional service that the public may well expect as routine often leaves public relations media rather cold. In the new Pharmacy Week program the pharmacist will continue to emphasize his daily contribution to medical care. More important, he will actively demonstrate a basic unselfish interest in public health by dedicating this week to the placing of needed information on cancer control in American homes and minds. Members of A. Ph. A.'s Pharmacy Week Committee, and others with whom the new program has been discussed, are convinced that here lies a key to greater public recognition. True enough, the pharmacist will not stand alone in the spotlight of Pharmacy Week; it will show him cooperatively at work on a public health project that requires his aid.

This assumes that the individual pharmacist—you—will participate. A basic weakness of many national public relations programs is the difficulty of channeling their power to the local level. Pharmacy Week has had the advantage—and the problem—of building from the bottom up. Use of Pharmacy Week material in the corner pharmacy and in the local community remains necessary if the pharmacist is to benefit fully from the national program.

Contentions that the pharmacist was given too little concrete assistance in past years may not be without some foundation in fact. Yet it must be recognized that former Pharmacy Week Committees usually accomplished more than we had a

right to expect from the limited funds and facilities available.

With the Pharmacy Week Committee backed by the American Cancer Society to carry out the chosen theme, we may now expect to have available more material for professional window displays, literature for distribution to patrons, and other aids that will make participation more a matter of will than of work. Plans are now being completed, and it is expected that a week in March or April will be designated for the observance. You will soon receive a personal invitation to join in the program. The AMERICAN PHARMACEUTICAL ASSOCIATION, together with the National Association of Retail Druggists, believes that pharmacists will respond to an endeavor that will so clearly benefit both the public and the profession. It is a public relations program that we need—keyed to the local level.

The future of Pharmacy Week will depend greatly on the extent of participation in the expanded and soundly conceived program now being planned.

HOSPITAL PHARMACY REGULATION

HOSPITAL pharmacists have been rightfully concerned about the hesitancy of some states to establish or enforce standards for institutional practice on the same plane that protects the public at the corner pharmacy. From hospital pharmacists, headed by the American Society of Hospital Pharmacists, there have been some justified criticisms. As a group they have a fine sense of professional pride and discern that effective regulation means something both to their specialty and to the hospitalized patient.

The analysis of present regulatory control over hospital pharmacy, appearing on page 545, should help clear away the fog of generalized discussion that surrounds this controversy. It will show where regulatory authority is lacking, and perchance reveal some instances where regulatory authority is lax.

In states where hospital pharmacy is not adequately controlled, hospital pharmacists are probably too few to force the issue alone. They deserve the help of organized retail pharmacists and state boards, plus the cooperation of health departments and organized medicine. Although a great many hospitals have voluntarily developed effective pharmaceutical service, we believe no state can justify two sets of legal standards for pharmacy, one of which assumes that institutional pharmacy automatically meets the needs of modern practice.

Sirs:

I have just read your lead editorial in the October issue of the *Practical Pharmacy Edition* of the JOURNAL titled "Super Sabotage" and wish to commend you for it. It is a straightforward statement of facts and will be well received by all pharmacists who believe that the prescription department is still the heart of the drugstore.

The writer attended the recent Rexall convention in Atlanta where a picture was shown covering the features outlined in the brochure, "Opportunity Unlimited." At the conclusion, the various features of equipment, merchandising helps, etc., were commented upon at length by two of the executives of the company. At no time was any reference made, either in the picture or in the talks, to the prescription department. At the conclusion of the talks a question and answer period was held and I directed this question to Mr. Dart and his associates: In the picture just shown and in the two talks just given no mention was made of the prescription department, the most important part of the drugstore. What is the reason for not emphasizing the prescription department?

The answer was that the prescription department had not been overlooked. A prescription department placing the pharmacist on a pedestal was being designed in order that the pharmacist might have a full view of the store for pilferage and better supervision.

After the meeting several pharmacists from the states in the Southeast came to me with the comment that they had noticed the slight reference to the prescription department as I had, and they commended me for making the point.

CHARLES HALL EVANS

Warrenton, Ga.

Sirs:

I liked your editorial in the October issue of the *Practical Pharmacy Edition* very much, and sincerely hope that it will cause many pharmacists throughout the nation to give serious thought to this development

A. H. UHL

Madison, Wis.

Sirs:

This letter is in regard to your editorial in the October issue titled "Super Sabotage." The sabotage of the upbuilding of retail pharmacy, to which you refer, is not the policy of Justin Dart, nor of United-Rexall. The sabotage is the same sabotage which sank pharmacy to its lowest levels and forced us to merchandise to live. . . . It has been survival of the fittest. Not so long ago a drugstore was an

establishment where prescriptions, drugs, chemicals and related health items were purchased. But on that basis, under present-day conditions, even with the help of the AMERICAN PHARMACEUTICAL ASSOCIATION and allied organizations, we would have long since been starved out.

The Rexall "propaganda brochure" to which you

refer is entitled "Opportunity Unlimited" and definitely does not insist that the salvation of Rexallites lies in pirating the business of other small shops on Main Street. I would like to inform you that the program outlined is "upgrading Rexall

stores". . . The illustration concerning the business of other small shops in the drugstore is a condition which any pharmacist recognizes as true. But these stores have pirated our business. . . .

Rexall stores will not be converted into super-markets. Many of them will be converted into super-stores. Your editorial fails to distinguish between a super-market and a super-store. The issue is so fundamental that it is obviously misinterpreted or distorted. And remember there is nothing compulsory about Mr. Dart's plan. It is purely optional whether you wish to upgrade your store or wish to leave it in its present filthy condition.

As far as professionally acceptable establishments are concerned, you know of drugstores in your own neighborhood where you would not want a prescription filled for one of your sick loved ones. These stores have done more harm over the years than Justin Dart can ever overcome with his ambitious program of upgrading.

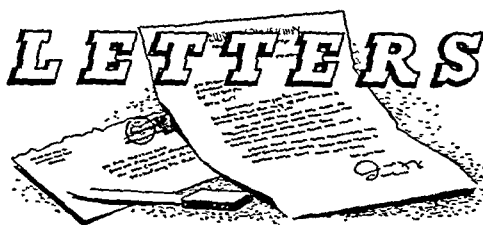
You mention the problem of state boards and legislatures in determining the limits of legitimate pharmacy and state that "Obviously pharmacy must object to 'super-stores' within its own ranks, as well as to the super-market with the drug department—if we are to be fair to the public and preserve traditional high concepts of professional service." Thousands of stores already licensed by our state boards and legislatures should not be legitimate pharmacies in the sense which you refer to them. . . .

Let me say that I think your editorial is a bad piece of propaganda which has no place in the JOURNAL.


Mr. Dart does not have to know all the answers, and many of his ideas will never materialize because they are so radical a change from American pharmacy ideals. . . . But even if his glittering propaganda, as you call it, does nothing more than make more drugstores glitter from cleanliness and remodeling he will have accomplished more than some of the supposed champions of pharmacy who still dream of bulk pigments for paint and a dark dirty emporium smelling of iodoform.

RAYMOND E. MERCIER

Plainfield, Conn.



STRAIGHT FROM HEADQUARTERS



by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

DRUG TRADE CONFERENCE PROGRAM

LAST month this column referred to the origin and activities of the National Drug Trade Conference. Since then the Conference held its 1946 meeting. It differed from a number of previous meetings of this over-all organization of the drug industry in that there was unanimous agreement on some matters of far-reaching importance to the profession and to the industry.

At the 1945 meeting of the Conference the age-old question of adequate and proper control of the distribution of drugs was raised again, and another effort was made to record the Conference in favor of professional control of drug products from their initial production to their final distribution. This resulted in the appointment of a committee to study the entire question of uniformity of laws governing the practice of pharmacy and the distribution and production of drugs at the Federal and state levels.

The committee appointed to study this matter included one representative of each of the organizations making up the Conference and it immediately proceeded to go to work on its assignment. It held five meetings and came to agreement on the elements of uniform state legislation in the matter of sale of caustic poisons, veterinary remedies, barbiturates, and narcotics. In addition, the committee advocated support with certain reservations, of a uniform state food, drug and cosmetic act proposed by state food and drug officials. It made little progress in agreeing upon a state pharmacy act, largely because of the fundamental controversy between the proprietary medicine interests, who wish to sell their products through any type of outlet, and the professional groups who believe that all drugs, medicines, and poisons should be sold only under professional supervision.

UNIFORM STATE BARBITURATE BILL

AGREEMENT upon the provisions of a state barbiturate law was, perhaps, the most important action resulting from the efforts of the

committee, because the Drug Trade Conference endorsed the proposed act submitted by the committee. This will now be circulated to the respective states for endorsement by their medical and pharmaceutical associations in the hope that it will become the law in a sufficient number of states to regulate the distribution of barbiturates to the point where Federal regulation will be unnecessary.

The alternative to failure to regulate the distribution of these products at the state level is Federal control similar to the Harrison Act control over the distribution and sale of narcotics.

It is generally agreed that such stringent control is neither necessary nor desirable, since barbiturates are not in the same category as narcotics.

If unlawful possession—that is, possession except as a result of a physician's prescription—can be controlled, and sales to those who are not members of the professions or legitimate agents of drug manufacturers and wholesalers can be prevented, it will be possible to stop the illicit traffic and end the unfavorable publicity which has unfortunately been associated with the distribution of these drugs.

The AMERICAN PHARMACEUTICAL ASSOCIATION called the first conference of all interested professional groups to explore this subject in October, 1945. From the discussions at this meeting and the presentation of data showing the wide variations in state regulations on this subject, there developed the provisions of a regulatory procedure which were fully reviewed by our Committee on Legislation. A draft of a bill was prepared and this was then submitted to the Drug Trade Conference Committee for study. Later it was presented to the House of Delegates for consideration at the Pittsburgh convention.

When it later developed that agreement could be reached in the Committee on Uniform State Laws of the National Drug Trade Conference on the controversial provisions, AMERICAN PHARMACEUTICAL ASSOCIATION representatives in the

Conference felt that legislation of this importance might well be left to the Conference for further development. Accordingly, we now have a proposed uniform State Barbiturate Act, sponsored by the National Drug Trade Conference.

With such backing from the drug industry and the profession of pharmacy and the anticipated backing of the American Medical Association, it should not be difficult to convince state legislators of the advisability of the type of control of barbiturates suggested in this bill.

Briefly, the bill limits the distribution of barbiturates to the prescription of medical practitioners only. It limits renewal of prescriptions to the specification of the prescriber. If the prescription carries no directions with respect to renewal it cannot lawfully be renewed. It requires an inventory of stocks of barbiturates by all handlers, professional men, manufacturers, and wholesalers, at the time the act is passed. Commonly kept records of purchases, sales, and dispensing on prescriptions constitute the only other required records. Possession without prescription outside of the regular course of legitimate commerce is punishable by fine or imprisonment, or both.

State pharmaceutical associations should give careful study and support to this proposed bill as a method of obtaining uniform regulation and stopping the illicit traffic in these important but potentially harmful drugs. We can and must put an end to the tragic incidents and the unfavorable publicity that has been directed toward pharmacists as a class through the derelictions of a few.

HIGH COLLEGE ENROLLMENT

PUBLICATION of accurate figures on student enrollment in colleges of pharmacy has led to much comment; some of it sound and some less so. To be sure, the fact that there are now 15,564 students in all classes of our 67 schools of pharmacy is nothing to be rushed aside lightly. Especially is this so when we recall that the previous maximum enrollment was hardly half this number. It develops that 10,586 of these students are war veterans.

The crowding of colleges of pharmacy must be considered in the light of the general situation just as the lack of students during the war years was a part of the general situation. We complained bitterly about the possibility of closing up our schools of pharmacy because there were no students and we moved heaven and earth to obtain exemptions and postponements of the draft to keep pharmacy students in college during

the war because of our essential professional service. Now that the students who would ordinarily have been in attendance during the war years have descended upon us all at once, we are beginning to wonder what effect all this will have on the future of the profession.

We have a responsibility, just as every other professional college group has, to train as many of the war veterans as are capable of absorbing and utilizing the training which they seek. This is not a time for making a bid for students to enter the profession of pharmacy. On the other hand it is also not a time for denying the right to obtain training to properly selected, capable students showing aptitudes and qualifications for the profession.

It all sums up to obtaining an accurate estimate of the public need for professional pharmaceutical service, the maintenance of a high standard of scholarship, an honest appraisal of the qualifications of applicants, and an honest statement to them of the opportunity or lack of opportunity for the exercise of their faculties and abilities and the possibilities of economic success. If teachers are completely fair and honest with incoming students, if college administrators place the welfare of the public ahead of their own institutional welfare, and if the profession will continue its support of institutions which deal with this problem with complete honesty, there will be a certain limitation in the number of students which can be accepted because of the limit of physical facilities, faculty and administrative personnel.

If all of these are expanded on a high professional and academic plane more students can be accommodated, but it is highly doubtful that institutions which could previously accommodate only a limited student body can double their capacity without encountering insuperable obstacles. To permit an expansion on any other basis is to degrade pharmaceutical education and therefore to degrade pharmacy.

It must also be borne in mind that 11,632 of the 15,564 students are enrolled in the first two years of the pharmacy course at present. When these men reach the upper classes there will have to be considerably more expansion if they are to be replaced by equal numbers of incoming freshmen and sophomores.

The problem has many angles and much thought is necessary for its proper solution. There should be no hysterics nor commercialism in meeting the problem. It can be met adequately and it must be met honestly if American pharmacy is not to revert to an era of which no one in the profession was proud.

PHARMACY I

by KNUT M. SJOBERG

STOCKHOLM, SWEDEN

FROM the beginning of the establishment of pharmacies in Sweden in the sixteenth century, it has been a privilege of the king to appoint the owners of pharmacies. Such persons get a license from the king, which is valid for a particular location. Thus no pharmacist may conduct a pharmacy without a license.

Pharmacies are established where it is considered that they meet a public need and where they can give the owners a fair income. If the last condition is not fulfilled and the citizens of a district yet wish to have a pharmacy, they can get one if they undertake to supply free premises for the pharmacy and its owner. Neighborhoods of this type also may be served by a branch of a larger pharmacy in the same area.

Sweden has a population of about 6,700,000 persons. In 1945 there were 220 pharmacies in the towns and 195 in the country. There are about 12,300 persons to each pharmacy in a town and about 20,000 persons to each pharmacy in the country.* The latter, however, often make their purchases in the towns. Therefore pharmacies in rural areas have a low income.

In addition, there are about 500 rural drug suppliers who sell medicine and first-aid requisites frequently demanded. These are conducted by midwives, shopkeepers or some reliable person. They are operated on a certain pharmacist's account and only unopened packets are sold.

When a pharmacy is vacant through the death or pensioning of the owner or other cause, the vacancy is announced and the most meritorious applicant is appointed in the following manner:

There is a committee consisting of 5 persons: 2 owners of pharmacies appointed by their pharmaceutical organization, 2 non-owner pharmacists appointed by their organization, and a chairman appointed by the Medical Board. The current chairman is a professor at the Pharmaceutical University. After deliberation, this board chooses one applicant to head the list of prospective owners, and the position is referred to the government to be filled by appointment.

The new owner has to buy the pharmacy's

* The Bureau of Census reported that in 1939 there was one pharmacy in the United States for each 2270 persons. On this basis Swedish pharmacies have five to ten times as many potential patrons.—THE EDITOR.

PHARMACISTS SELL ONLY DRUGS, TAKE MONTH-LONG VACATIONS, AND WORK SHORT HOURS, BUT LOCATION OF PHARMACIES AND MANY CONDITIONS OF OPERATION ARE UNDER CONTROL OF STATE

stock and fixtures from his predecessor within a fixed time. As a rule they come to an agreement about the price, but if by chance that should not be the case, there is a board consisting of experienced pharmacy owners which establishes a fair price.

Within the Medical Board, previously mentioned, are separate offices for all branches of health and nursing. The office for pharmaceutical affairs consists of 7 members: a chairman, 3 pharmacist-members, a secretary and clerks. The chief of the Medical Board, who is appointed by the government, is for the present a physician but he may be of any health profession. Final decisions on any question rest with the chief of the Medical Board.

The first physician in every district is expected to make an inspection of the pharmacies in his district once a year but it is a formality. The pharmacies are inspected by two professors of pharmacy at various times, who are well informed of the conditions.

As regards other branches within the Medical Board they have the same position as the pharmacists but get their pensions from the government and pay only a very small part of their salary to this fund. The pharmacists, on the other hand, pay for their pensioning and sickness insurance themselves.

It should be pointed out that there are fixed prices on all medicine as well as on preparing it. Fees are worked out by a committee of pharmacists and are sanctioned by the government.

The pharmacist operates his own establishment, of course, but he is allowed to keep only a certain fundamental part of the net proceeds, which may be regarded as his salary as a public official. This fundamental amount depends on the different prices in force in the different localities. Sweden has been divided into zones conforming to the higher or lower cost of living which prevails in different districts, maximum prices being fixed on the commodities with wages to harmonize.

[The author expressed sales and salaries in crowns throughout his original article. Wherever dollar values have been added, the official rate of exchange has been used. This does not, however, cover the relationship between the purchasing power of the dollar in Sweden as compared with the United States. Several sources estimate that on the average a specified salary in Sweden will have at least twice the purchasing power of a similar salary in this country.—THE EDITOR]

The pharmacy owner's salary is 11,000 to 12,500 crowns (\$3,080 to \$3,500) a year. In addition the pharmacist keeps a certain percentage of the surplus of the net proceeds. For instance, if a pharmacy located in a zone of very high prices gives a net income of 80,000 crowns (\$22,400), then the owner keeps:

The fundamental amount	12,500 crowns	\$3500 00
90% of the first 1000 cr	900 crowns	252 00
70% of the next 2000 cr	1,400 crowns	392 00
50% of the next 3000 cr	1,500 crowns	420.00
30% of the next 3000 cr	900 crowns	252 00
10% of the remaining profit	6,280 crowns	1758 40
	28,480 crowns	\$6574 40

The rest of the net gain, 56,520 crowns is transferred to a fund in which all pharmacies have a mutual ownership. Thus each pharmacy may be looked upon as a corporate owner, so to speak.

From this common fund is disbursed: pensions to the pharmacists, part of salary to the clerks and pay-increases according to length of service, assistance to all that are regularly employed when they are sick or out of work, and subsidies to owners whose pharmacies give an income of less than 7500 crowns. Such a subsidy is very seldom necessary, however.

A pharmacist employed in a pharmacy receives a salary of 10,125 crowns (\$2835) annually. In this sum is included five pay-increases according to length of service, and 200 crowns when the pharmacy is located in a zone of high prices of which 30% is due to the pres-

ent high cost of living. Of this salary, the owner pays only 3000 crowns; the rest is paid by the common fund.

A pharmacist must work forty-six hours a week to partake of pay-increases and other benefits from the common fund.

For a candidate of pharmacy, the pay is 6850 crowns. In this sum is included four pay-increases after a certain length of service, and 130 crowns in zones of high prices of which 30% is due to the present high cost of living.

To give an idea of the salaries of pharmacists as compared with those of civil servants paid by the government, some examples are given below. A professor at a university having a doctor of philosophy degree receives 15,000 crowns; a teacher at a college having a doctor of philosophy degree receives 13,000 crowns; and a postmaster receives 9000 to 14,000. The pay-increases due to the present high prices are included but not the two or three rather small pay-increases given for length of service.

During sickness the pharmacist is eligible to receive a full month's pay for each period of



DISTINGUISHED PHARMACIST and honorary member of the American Pharmaceutical Association, Knut M. Sjöberg of Stockholm (above) has prepared the accompanying discussion of pharmacy in his native country.

twelve successive months of service. In case of an extended illness, he gets a sick-relief compensation corresponding to two-thirds of the regular salary. Such a sick relief can be obtained for five years in succession, after which there is a possibility of getting pensioned in advance. When out of work from no fault of his own, the pharmacist receives a little larger compensation than the sick relief.

All persons regularly employed in a pharmacy are entitled to a pension which is paid, as stated above, from the common fund of the pharmacies. The owner has to retire at the age of sixty-seven. Male pharmacists and candidates of pharmacy may choose to retire or to continue working. Female pharmacists may receive a smaller pension at the age of sixty if they choose to be pensioned.

Educational Requirements

To become a pharmacist one must first pass the preliminary student examination. The Medical Board decides the number of "pupils" to be accepted each year and selects those who have the highest marks in their examinations in chemistry, physics, biology and mathematics. An accepted applicant begins his preliminary work in a pharmacy as a "pupil," which generally lasts two years. A first degree at the Pharmaceutical University is then taken. This makes him a "candidate" of pharmacy, and by continuing study at the university—as most male students do—he may become a "legitimized" pharmacist after a minimum of five and one-half years from the time he started as a pupil. This training is, however, now under reorganization.

During the last ten-year period the number of "pupils," who serve as laboratory helpers in pharmacies, has averaged 76 a year, but in 1945 there were 155 so-called "B-pupils" added. These pupils will take a candidate of pharmacy examination somewhat similar to the regular one, but it will not give them the right to continue their studies at the University, thus preventing them from becoming an owner of a pharmacy at some future time. The purpose of this check on the advancement of the B-pupils is to give legitimized pharmacists an opportunity by limiting the number of pharmacists who may become owners of pharmacies at an early age and, furthermore, by getting proportionally more candidates for employment (which reduces the cost of labor).

The number of legitimized pharmacists employed in pharmacies in Sweden is 460, candidates of pharmacy 600, pupils 114, and there are a hundred or so additional candidates studying at the University.

The majority of those who have chosen pharmacy as their profession during the last few years have been women. However, since they frequently marry and then cease to study, the end result has been that more men actually become pharmacists.

The inter-marriage of pharmacists has proved a great advantage to the owner of a small pharmacy. He has, in his wife, a competent assistant at a small expenditure to himself since her salary, to a great extent, is paid from the common fund.

At present the average pharmacist becomes the owner of his first pharmacy at the age of forty-five. After five years he can obtain a transfer to a better paying pharmacy, and it is not unusual that a pharmacist may become the owner of three pharmacies successively.

The pharmaceutical profession is in great demand; hence, more persons apply as pupils than can be accepted. Legitimized pharmacists and candidates of pharmacy are entitled to do all types of work in pharmacies. Only the former are allowed to be owners. The technical helpers may assist in preparing such medications as pills, powders and decoctions, but they are not permitted to prepare any prescriptions on their own responsibility.

Pupils of pharmacy, as a rule, do the same things as the technical helpers, but they are also to help with the work in the laboratory.

From a Stockholm Pharmacy

To illustrate the purchases in a pharmacy in Stockholm, I have obtained the following figures.

	NUMBER OF CASH PAYMENTS	ON CREDIT	TOTAL PURCHASES
January	27,421	972	28,393
February	22,472	823	23,295
March	22,771	888	23,659
April	25,557	881	26,438
May	19,365	758	20,123
June	19,150	758	19,908
July	17,401	638	18,039
August	16,658	744	17,402
September	19,229	913	20,142
October	25,520	1,148	26,668
November	21,406	1,041	22,447
December	21,719	918	22,637
	258,669	10,482	269,151

In this pharmacy, the owner, 5 pharmacists, 4 candidates of pharmacy and 22 technical helpers and assistants are employed.

The number of persons being served in one day compared with the number of pharmacists varies a great deal in the towns and in the country. In pharmacies in the country there is generally a rush during a short time when the physician has his consultations. During the rest of the day there are few patrons, especially in the towns where there are several pharmacies. It is in the interest of the owner to have a large staff, thereby avoiding complaints from the customers.

During the months of May until September many persons go to the country. Then many of the staff take their vacations. As a rule the pharmacists take thirty days and the technical personnel take less time.

The pharmacies are, as a rule, open from 8 a. m. until 7 p. m., but pharmaceutical service remains accessible when they are closed. In towns where there is more than one pharmacy, half are open Sundays and nights.

Good discipline is maintained in the pharmacies, not only toward the owner but also toward the employed pharmacists from the subordinate staff.

Pharmacies in Sweden differ from pharmacies in the United States in the number of articles for sale. In Sweden, only medicine is sold except for some customary first-aid supplies, bandages, and sanitary toilet articles such as tooth paste and mouth wash.

In 1912 the pharmacies in Sweden had a total

sales of 14 million crowns (about three and one-fourth million dollars); now it is nearly 100 million crowns (about 25 million dollars). The great increase in sales is not so much due to increased prices of traditional drugs, but due to more expensive new medicines that have appeared and to the fact that the public resorts more frequently to the services of physicians and pharmacists in case of illness.

Though it is the general opinion of the public that medication is expensive, they must accept the present prices. The great majority of the pharmacists are content; however, there is a minority who believe it would be beneficial if the government made dispensing a monopoly of its own, as in the case of the postal system and the selling of tobacco and spirits.* I believe the medicine would be more expensive in that case and the public would be less attentively served than if it is in the interest of the private owner and his staff to satisfy his patrons as much as possible.

* The Swedish government has now appointed a committee to investigate the question of nationalizing the pharmacy system, which appears to stem largely from a demand for lower prices of medications. In a report recommending the investigation, the Acting Minister of Social Affairs requested that a study be included to determine whether certain medicines which are sold could not advantageously be prepared either at a laboratory for the entire country or at a small number of pharmacies that would be particularly well equipped for this purpose. The present methods of preparing medicines were termed "old fashioned involving undue costs." The report emphasized that "it is important that the conditions precedent to the maintenance and development of the professional knowledge and skill of the personnel of the pharmacies are not infringed upon through organizational changes"—THE EDITOR

DIETARY TREATMENT OF CANCER DUBIOUS

TREATMENT of cancer by Dr. Max Bernhard Gerson's dietary and salt controlled method is seriously questioned by the *Journal of the American Medical Association*, which finds in it "nothing resembling scientific evidence as to actual merit." Although actual cure is not claimed, the treatment is alleged to improve the patient's health and in some cases delay the growth or reduce the size of tumors. Several requests to Dr. Gerson for information as to the details of his method of treatment produced no satisfactory reply.

The only published statements as to the number of patients treated, the number benefited and the possible effects of the treatment appeared in the *Review of Gastroenterology* (November-December, 1945).

Treatment of cancer by Dr. Gerson's method consists of a schedule of diets giving minute de-

tails. A long list of forbidden foods including canned, preserved, sulfured, frozen, smoked, salted, refined or bottled food is part of the treatment. It also specifies that there must be no salt, soda, sodium bicarbonate, fats or oil in the diet. Basis of the diet was a special soup of which the patient is supposed to take one quart a day. Other diet stipulations were placed on the patient from time to time. Medication included Lugol's solution, niacin, liver powder with iron, lubile—dried bile salts, brewers' yeast, dicalcium phosphate with viosterol, phosphorus compound, crude liver extract intramuscularly, and also some injected vitamin K. The patient is warned against any other medication as possibly harmful and dangerous.

Some years ago Dr. Gerson's name was associated with a dietary regimen claimed to be a notable advance in the treatment of tuberculosis.

DRUG TRADE CONFERENCE MEETS

IMPORTANT resolutions covering state legislation, pharmaceutical education and professional standards were passed at the 1946 meeting of the National Drug Trade Conference held in Washington on October 30. Actions of the Conference are limited, and at the same time given added significance, by the rule which prevents the group from taking a stand on any matter which a single member considers controversial.

The Conference is composed of three delegates from each of three national manufacturing organizations, two national wholesale associations, A. Ph. A., N. A. R. D., A. A. C. P. and N. A. B. P.

Uniform State Legislation

In the field of legislation, the Conference recognized the need for further control over barbiturates and urged the enactment of proper legislation for more effective control at the state level. For this purpose a National Drug Trade Conference Uniform State Barbiturate Bill was approved, based on legislative research initiated by the AMERICAN PHARMACEUTICAL ASSOCIATION.

Recognizing the need for uniform state food and drug legislation, the Conference urged that so far as possible such legislation be in conformity with the Federal Act.

Agreement was also reached on a Uniform State Caustic Poison Bill, which was presented by the Conference Committee on Uniform State Legislation.

Substantial progress was reported by the Committee on formulation of a Uniform State Pharmacy Bill, although action was deferred.

The Conference formally expressed appreciation to "the Committee on Uniform State Legislation, and particularly to Chairman Robert P. Fischelis [A. Ph. A. secretary], for constructive studies of legislative subjects of interest to pharmacy and the drug industry," and asked that the Committee be continued.

In regard to health insurance legislation, the Conference went on record as opposing any effort to have individual states furnish medical care on a basis analogous to that proposed in the Federal Wagner-Murray bill.

Recommendations to Foundation

Following a report on the American Foundation for Pharmaceutical Education, which was founded under the sponsorship of the Conference, it was recommended to the Foundation that not more

than half of the funds in any fiscal year be expended until the total balance reaches \$5,000,000 and that this amount then be retained as a permanent endowment fund.

The Conference also suggested that the Foundation for Pharmaceutical Education make a thorough study of the possibilities of establishing a distinctive graduate school in pharmacy which would conform in every respect with standards of the most outstanding institutions devoted to graduate instruction in other fields.

Support Educational Standards

On the subject of educational standards the Conference reaffirmed "its conviction that graduation from an accredited school or college of pharmacy giving not less than a four-year course of study leading to the Bachelor of Science degree is an absolute minimum qualification for admission to the practice of pharmacy, and that any effort to reduce the foregoing requirements is deemed by the Conference to be contrary to the public interest, and that all legislative attempts to break down or impair established standards for graduation and licensure be condemned and opposed."

Such support representative of all branches of pharmacy and the drug industry is considered especially significant in view of the fact that legislation to reduce standards was introduced in six of eight state legislatures convened in 1946, and that 44 legislatures are expected to be in session during the coming year.

Pharmacy in Government Service

Supporting high professional standards in government practice, a resolution expressed "opposition to appointment of any pharmacist in the Army, Navy, Veterans Administration, U. S. Public Health Service or any other branch of government who does not possess at least a Bachelor of Science in pharmacy, if the pharmacist so appointed is to render any kind or character of pharmaceutical service."

The Conference also urged retention of the Pharmacy Corps in the Regular Army and asked that the War Department activate it in the manner Congress intended.

Dr. Edward C. Elliott, director of the Pharmaceutical Survey, spoke briefly at the meeting, receiving full support and approval of the delegates for the Survey work.

SYNTHESIS OF BENZYL PENICILLIN

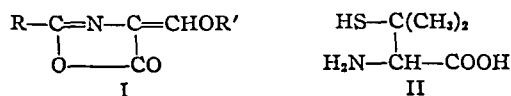
ACHIEVEMENT MARKS MILESTONE
OF SCIENCE BUT APPLICATION TO
LARGE-SCALE MANUFACTURE NOT
YET IN SIGHT . . . NEW PENICILLINS
MADE BY SYNTHETIC REACTIONS

THE synthesis of penicillin G and isolation of the product from the reaction mixture will have far-reaching importance in research on antibiotics, but is not expected to be of practical significance in the near future to practicing pharmacists and physicians. Because of the difficult synthesis, involving a mechanism still to be elucidated, and because of the very low yield, manufacturers do not now foresee replacement of the fermentation process for penicillin production.

Achievement of the synthesis constitutes, however, another milestone in chemical science. It is the climax of preliminary work by American and British chemists conducted over a period of several years. Final isolation of synthetic penicillin in crystalline form and unequivocal proof of its identity with natural penicillin come from the Cornell University Medical College. The report of this work, and a summary of contributing investigations by others, appears under the names of Vincent du Vigneaud, Frederick H. Carpenter, Robert W. Holley, Arthur H. Livermore and Julian R. Rachele.

In this report (*Science*, Nov. 8), and others to be published later on the chemistry of penicillin, a new nomenclature has been adopted. Penicillin G is designated benzylpenicillin; and penicillin K, F and X are designated, respectively, *n*-heptylpenicillin, Δ^2 -pentenylpenicillin and *p*-hydroxybenzylpenicillin.

Benzylpenicillin (G) has been synthesized by condensation of two major constituents of the penicillin molecule: an appropriate oxazolone, possessing a potential aldehyde group (I), and *d*-penicillamine (II), the latter having been obtained previously as a breakdown product of natural penicillin.



This approach to the problem produced reaction mixtures having antibiotic activity as early as the first months of 1944. The first reports of this discovery came from the laboratories of Merck and Co., although an analogous report was made a short time later in England by Robinson

and his co-workers, who had not yet seen the Merck results.

Using the two compounds *d*-penicillamine hydrochloride and 2-benzyl-4-methoxymethylene-5(4)-oxazolone (as originally employed by Merck), many laboratories experimented with the reaction and the resulting antibiotic mixture during the following year. Some doubt remained that the activity produced was due to penicillin, for two reasons: (a) the extremely low order of activity, and (b) the fact that other compounds, not structurally related to penicillin, possess detectable antibiotic activity by routine assay methods.

Then, at Cornell and at Merck and Co., the stability of the activity of the synthetic mixture was found to be identical with that of natural benzylpenicillin. The "bacterial spectrum" of the two products was also found at Cornell to be similar in tests against seven bacteria.

Still more evidence that penicillin was actually being synthesized in the reaction was obtained by the Cornell workers through use of the radioisotope "tracer technique." Penicillamine containing radioactive sulfur was condensed with the oxazolone. Non-radioactive natural benzylpenicillin was added to the mixture. Penicillin was isolated as the triethylammonium salt, which contained radioactive sulfur. Through a number of recrystallizations and through conversion to two derivatives, the content of radioactive sulfur remained constant, within the limits of experimental error.

If the synthetic product having radioactivity were not identical with the natural penicillin present, it would be expected that the two would separate upon recrystallization or formation of derivatives, with the result that the penicillin reisolated from the reaction mixture would contain no radioactivity.

Further confirmatory evidence was forthcoming from the Oxford University researchers who showed that the enzyme penicillinase, which inactivates penicillins, destroys the antibiotic activity of the synthetic reaction mixture.

Meanwhile, work at the Upjohn Co. laboratories and at Cornell produced concentrates of higher antibiotic activity from the reaction mixture. Comparative tests of these with natural penicillin showed similar infra-red absorption bands. Furthermore, it was shown at Cornell that the synthetic activity had the same distribution constants in several solvent pairs and

also the same rate of excretion, when administered to rabbits, as natural benzylpenicillin.

By now accumulated evidence warranted the conclusion that synthetic penicillin was being produced in the reaction, although in minute quantities. For unequivocal confirmation there remained the task of isolating crystalline synthetic benzylpenicillin from the mixture. To approach this problem a new procedure was used.

It had been found that when equimolar quantities of *d*-penicillamine hydrochloride and 2-benzyl-4-methoxy-methylene-5(4)oxazolone were condensed in pyridine containing triethylamine, a product was formed which was apparently free of starting material but possessed no antibiotic activity. This intermediate product was activated by heating it in pyridine containing pyridinium chloride.

However, the antibiotic activity of the reaction mixture was still equivalent to only about 0.1% yield of benzylpenicillin.

Although the modified procedure gave a readily reproducible yield, and a product which appeared more amenable to fractionation, final isolation was made especially difficult by the innate instability of penicillin.

Isolation of the crystalline triethylammonium salt of penicillin, in sufficient amounts for full characterization, eventually was achieved by the Cornell workers through use of the "counter-current distribution" method. The procedure was long and arduous.

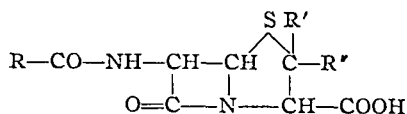
Physical constants and antibiotic activity of the isolated material agreed, within the limits of experimental error, with those of the same salt of natural benzylpenicillin.

Reaction Mechanism Obscure

Although synthesis of penicillin had been proved, because of the obscurity of the reaction mechanism it could not be used as synthetic proof of the chemical structure of penicillin. It is hoped that further study of the reaction will lead either to a proof of structure or to an improved method of synthesis—or both.

These experiments now open the way to synthesis of a series of entirely new and different penicillins. Many laboratories have already obtained antibiotic mixtures by reacting *d*-penicillamine with oxazolones having groups other than the benzyl radical in the 2-position. In view of the experiments with benzylpenicillin it seems clear that the antibiotic activity is due to new penicillins differing in the nature of the group R,

as illustrated on the basis of the β -lactam structure below.



By using thioamino acids other than *d*-penicillamine as the second major constituent of the reaction, both the Cornell and Merck laboratories have produced antibiotic mixtures, indicating the synthesis of analogues of penicillin differing from known varieties of penicillin in the nature of the R' and R" groups.

Thus a whole new field is opened for the exploration of antibiotics. Whether or not some hitherto unknown penicillins will possess new and desirable therapeutic properties must await extensive and undoubtedly prolonged research. The problems remaining to be solved before synthetic benzylpenicillin or entirely new penicillins may be evaluated therapeutically are obvious from current difficulties of obtaining even enough synthetic crystalline material for satisfactory chemical study.

It is a particularly significant fact that only the dextro- isomer of penicillamine yields an active synthetic product. Analogous examples of unnatural isomeric forms in other antibiotics, such as gramicidin and streptomycin, are known.

This fact leads to speculation as to whether or not the antibiotics do not replace analogous essential metabolites in the enzyme system of bacteria, but because of their unnatural form cannot function physiologically. Further study of these observations concerning isomeric forms in relation to antibacterial action may well lead to fundamental knowledge of far-reaching significance in pharmaceutical research.

PHARMACY DEAN CONSULTANT TO ARMY

Dr. James H. Kidder, dean of the Fordham University College of Pharmacy, has been named consultant to the Surgeon General of the Army as an adviser on matters relating to pharmacy in the Army Medical Department. Dr. Kidder was named among 122 experts in the medical profession and allied specialties who will serve as civilian consultants to the Secretary of War through the Surgeon General. This brings the total of civilian consultants to the Army Medical Department to 327.

MODERN PRESCRIBING TENDENCIES, VII

by L. W. RISING, E. M. PLEIN AND C. M. HONVLEZ

UNIVERSITY OF WASHINGTON, COLLEGE OF PHARMACY

OUR most recent contribution to the small but important body of data concerning the materials currently most widely used as prescription medicines stems from a survey of prescriptions filled in a busy downtown pharmacy in a large Washington city. It covers 1000 drug orders received between January 1 and 20, 1946. No refills or narcotics were considered.

The data collected are tabulated below:

Table I—General Data

Number of new prescriptions filled in twenty days.....	1000
Number of items used in compounding.....	343
Cost of inventory required to furnish chemicals necessary to fill the prescriptions.....	\$743.58*
Total ingredient cost.....	\$464.15
Average selling price.....	\$1.31
Average number of new prescriptions per day.....	50
Average income per day from these 50 prescriptions.....	\$65.50
Number of manufacturers represented	54
Official drugs in the 343 required items	136
Proprietary and nonofficial drugs in the 343 required items.....	207
Official drugs used, per cent of total.	39.65
Proprietary and nonofficial drugs used, per cent of total.....	60.35

Table II—Class frequency list showing the most widely used classes of drugs in this study

CLASS	TIMES CALLED FOR IN 1000 PRESCRIPTIONS	% OF USE IN 1000 PRESCRIPTIONS
Antiseptics (principally sulfonamides)	175	17.5
Vitamins	101	10.1
Hypnotics	87	8.7
Hormones	57	5.7
Exempt narcotics	34	3.4
Cathartics and laxatives	19	1.9

Table III—Frequency list showing the materials prescribed 5 or more times

DRUG	TIMES IN 1000 PRESCRIPTIONS	% OF USE IN 1000 PRESCRIPTIONS
Sulfonamides	119	11.9
Vitamin B combinations	65	6.5
Phenobarb. combinations	58	5.8
Acetyl salicylic acid combinations	29	2.9
Thyroid	23	2.3
Sod. salicylate, enteric	18	1.8
Elixir terpin hydrate and codeine	18	1.8
Elixir glycerophosphates	16	1.6
Nembutal	16	1.6
Potassium sulfocyanate	12	1.2
A. C. troches	12	1.2
Digitalis preparations	12	1.2
Saturated solution of potassium iodide	10	1.0
Syrup of raspberry	10	1.0
Aminophyllin combinations	9	0.9
Penicillin troches	8	0.8
Belladonna or atropine combinations	8	0.8
Camphorated tincture of opium	8	0.8
Elixir of lactopepsin	7	0.7
Elixir of triple bromides	7	0.7
Strychnine sulfate	7	0.7
Tincture of belladonna	7	0.7
Dical D with Iron	6	0.6
Hexamethylene-tetramine	6	0.6
Milk of magnesia	6	0.6
Ointment of ammoniated mercury	6	0.6
Dical D	5	0.5
Bone phosphate powder	5	0.5
Caffeine citrate	5	0.5
Calamine lotion	5	0.5
Feosol tablets	5	0.5
Glycerine	5	0.5
Milk of bismuth	5	0.5
Phenacetin	5	0.5
Proloid	5	0.5
Salol	5	0.5

* This is the total cost of all original packages that had to be purchased to get the required drugs into the pharmacy. In many instances, after the prescriptions were filled, a considerable portion of the material remained for use in subsequent prescriptions.

FOURTH ANNUAL A. Ph. A. - N. A. R. D. JOINT CONFERENCE

THE Council of the AMERICAN PHARMACEUTICAL ASSOCIATION and the Executive Committee of the National Association of Retail Druggists met in joint session at the Hotel Sherman in Chicago on November 23 to consider problems of mutual interest concerning the practice of pharmacy in the United States.

This was the fourth annual meeting of the joint groups and, like preceding meetings, the agenda covered practically every problem now confronting the pharmacists of the nation. In the all-day session more than fifty topics under eleven main headings were given consideration and the actions taken on these matters are reflected in the resolutions passed.

It has been the practice of the A. Ph. A. Council and the N. A. R. D. Executive Committee to collect resolutions and recommendations adopted by state pharmaceutical associations, national associations and other groups throughout the year. These documents are then reviewed to learn the thought of pharmacists on subjects of sufficient importance to reach the stage of organized action or expression of views.

The agenda for each annual meeting is developed by the association which acts as host for the meeting. This year the N. A. R. D. was the host, and the meeting was presided over by Chairman Frank Moudry of the N. A. R. D. Executive Committee, with Dr. George D. Beal, chairman of the Council of the A. Ph. A., acting as co-chairman.

The joint meeting gave long and serious thought to the threat of lowering pharmaceutical standards emanating from certain segments of the drug industry and individuals desiring special consideration without meeting accepted standards.

The growing enrollments in colleges of pharmacy, which have now reached the fifteen-thousand mark, came in for considerable discussion with special reference to the effect of these large enrollments on colleges of pharmacy and the quality of pharmaceutical practice. All phases of the subject, including the necessity for reorganizing curricula, recruiting capable teachers, financial support and the criteria for the selection of students, were discussed. In this connection, it was felt that The Pharmaceutical Survey now under way would shed considerable light on the needs of the profession for both the immediate and distant future.

Another important topic for discussion at the joint meeting was interprofessional relations. This discussion covered the fostering of state councils of physicians, pharmacists, dentists and other health workers; hospital pharmacy; dispensing by physicians; regulations with respect to prescription writing and recording, and the matter of meeting requirements of the law by proper use of warning statements on labels.

In discussing various phases of the relations between the drug industry and the practicing pharmacist, the matter of duplication of pharmaceutical specialties under different proprietary titles, and the furnishing to pharmacists of adequate information on dosage, incompatibilities, cautions and other data were explored.

The observance of National Pharmacy Week and National First Aid Week as part of the public relations program of American pharmacy and the supervision of radio advertising were discussed in detail.

As has been the case in previous meetings, much time was spent on the legislative and regulatory control of pharmacy, and this also included discussion of such topics as the Army Pharmacy Corps and the proposed Medical Service Corps, the Veterans Administration plan for supplying prescription service, the extension of medical care plans and the representation of pharmacy on state boards of health. On the legislative side, barbiturate control, model bills affecting various phases of the dispensing of drugs, medicines and poisons, and tax legislation received much thought and resulted in considerable discussion.

Improvement in the professional appearance of pharmacies and the maintenance of more satisfactory employment conditions, with special reference to what can be done to assist pharmacist-veterans returning from service, were also discussed.

Finally, the matter of meeting the requirement for adequate representation of the pharmacists of the nation in these joint conferences, and ways and means of making the actions taken more effective, were considered. It was left to the administrative offices of the two national associations to effectuate the policies and proposals to which expression was given in the resolutions.

It was the feeling of the members of the joint committees that reiteration of the position taken by the joint meeting in previous years was unnecessary, since the record will show how this

group stands on such matters. To give expression, however, to the discussion and consensus of the two groups on matters which are of such current importance as to warrant reiteration or which were not previously covered by resolutions, a Committee on Resolutions was appointed. This Committee, consisting of Dr. Hugo H. Schaefer and Dr. Robert P. Fischelis of the A. Ph. A. Council and Messrs. Theodore Christianson and Herman Waller, representing the N. A. R. D., drafted the resolutions given below, which were adopted unanimously and approved by the respective bodies.

Those present at the meeting were: Representing the N. A. R. D., Otto Kohl, John Dargavel, Frank Moudry, George Frates, Herman Waller, Theodore Christianson, William McConaghy, John Tripeny, P. J. Suttlemyre, James Lyons and Charles Gilson; representing the A. Ph. A., Earl R. Series, George D. Beal, Hugo Schaefer, Ernest Little, Hugh C. Muldoon, Henry Gregg, George Moulton, P. H. Costello, A. Lee Adams and Robert P. Fischelis.

STANDARDS FOR PRACTICAL EXPERIENCE

RESOLVED that the Council of the A. Ph. A. and the Executive Committee of the N. A. R. D., in joint assembly, endorse in principle the minimum standards for evaluating practical experience required under the respective laws as a pre-requisite for licensure approved by the N. A. B. P. and recommend the adoption of these minimum standards by the respective states, and be it further,

RESOLVED that owners and managers of pharmacies be urged to cooperate to the utmost in meeting these standards and in affording prospective licensees the opportunity to obtain the desired quality of practical experience.

QUALIFICATIONS FOR LICENSURE MUST BE MAINTAINED

RESOLVED by the Council of the A. Ph. A. and the Executive Committee of the N. A. R. D. in joint assembly, that the scientific development of new remedial agents and advances in medical science have so increased the responsibilities of the dispensing pharmacist in the maintenance of public health that public interest will not permit the relaxation of qualifications for the practice of pharmacy.

VETERANS ASKED TO HELP MAINTAIN STANDARDS

RESOLVED that the Executive Committee of the N. A. R. D. and the Council of the A. Ph. A., in joint assembly, urge that every effort be made to prevent the enactment of legislation which seeks to break down established standards of education and licensure under the guise of providing assistance to war veterans, and that the cooperation of student bodies of colleges of pharmacy, which now include a high percentage of war veterans, be enlisted to this end.

NEEDS OF PHARMACEUTICAL EDUCATION

RESOLVED by the Council of the A. Ph. A. and the Executive Committee of the N. A. R. D., in joint assembly, that in order to maintain the high level of service to the public required under modern conditions of medical and pharmaceutical practice we recommend

(1) that colleges of pharmacy be urged to develop their curricula and training programs in line with the requirements for modern pharmaceutical research, large scale production of drugs and medicines, governmental pharmaceutical activities, the retail practice of pharmacy and practice in hospitals and institutions maintaining pharmaceutical service;

(2) that every effort be made to make such programs possible by obtaining financial aid from private and public sources, and that university and college administrators responsible for the development and maintenance of colleges of pharmacy be acquainted with the needs of these colleges to the end that they may receive their fair share of the available funds; and

(3) that careful consideration be given to the possible disadvantages resulting from the overcrowding of the profession due to a lack of proper selection of students or failure to measure the requirements of the profession for rendering adequate public health service.

LIMITING DISPENSING OF DRUGS TO PHARMACISTS

RESOLVED, that the Council of the A. Ph. A. and the Executive Committee of the N. A. R. D., in joint assembly, reiterate the stand taken by this joint body to the effect that every lawful means be sought to protect public health by limiting the dispensing of drugs and medicines, including vitamins in various dosage forms, to registered pharmacists or to personnel employed in pharmacies under the immediate personal supervision of registered pharmacists.

IMPROPER DRUG ADVERTISING

RESOLVED that the Council of the A. Ph. A. and the Executive Committee of the N. A. R. D., in joint assembly, commend all efforts to avoid improper drug advertising, and urge radio officials and organizations to assume their public health responsibilities by cooperating fully in this endeavor, and be it further

RESOLVED, that the dissemination of misleading or unqualified advertising claims that a medicinal product is "compounded just like a doctor's prescription," or that a medicinal product is "recommended by your druggist," be disapproved.

PHARMACISTS NEED DATA FROM MANUFACTURER

RESOLVED by the Executive Committee of the N. A. R. D. and the Council of the A. Ph. A., in joint assembly, that manufacturers be requested to furnish all pharmacists complete information on

dosages, incompatibilities and cautions regarding all new drug products, and that this information be provided in advance of the sale and use of such products.

ENCOURAGE ALLIED HEALTH COUNCILS

RESOLVED by the Council of the A. Ph. A. and the Executive Committee of the N. A. R. D., in joint assembly, that since war and postwar conditions have emphasized interlocking responsibilities between physicians, dentists, pharmacists, nurses, hospital administrators and public health officials and such responsibilities definitely call for more effective cooperation among these groups it is urged that they arrange for more frequent contacts for the consideration of problems of mutual interest, and that the creation and development of allied health councils in the various states be encouraged toward that end.

USE OF THE PRESCRIPTION LEGEND

RESOLVED by the Council of the A. Ph. A. and the Executive Committee of the N. A. R. D., in joint assembly, that in view of the intent of the present Food, Drug and Cosmetic Act and regulations to provide a clear distinction between drugs which may be freely sold and those which are restricted to prescription use only; and in further view of the inadequate and confusing directions carried on some labels, such as "used as directed by the physician," and because many drug products are distributed which still bear the prescription legend contrary to and in violation of these regulations, it is urged that drug manufacturers be requested to comply fully with the intent and provisions of the regulations and that the Food and Drug Administration be requested to enforce these provisions properly.



EFFECT OF SALICYLATES ON HEART STUDIED

PREVENTION of organic heart disease presents the most important problem in the treatment of acute rheumatic fever. Though clinical evidence has been established concerning the rapid antipyretic action of salicylates and the efficient alleviation of pain and swelling of the joints with salicylate therapy, there has been some dispute regarding the effect of salicylates on the heart.

Three types of treatment were carried out in the study made by Warren, Higley and Coombs, U. S. Army. One group of patients was given small doses of sodium salicylate to relieve symptoms, a second group was given large oral doses until all evidence of rheumatic activity had subsided, and a third group received sodium salicylate intravenously for one week followed by large oral doses. Observing 186 cases, using these three types of treatment and considering the effect on the length of rheumatic activity, on polycyclic attacks, on pericarditis, and on the occurrence of permanent cardiac damage, the Army clinicians concluded that:

"1. The use of sodium salicylate in amounts of 10 to 16 Gm. per day will reduce the temperature more quickly in acute rheumatic fever than will small doses. Likewise large doses appear to offer an advantage in the treatment of acute rheumatic pericarditis.

"2. The use of sodium salicylate in doses of 10 to 16 Gm. per day will not prevent the development of cardiac damage or the progression of pre-existing heart disease. Large doses of salicylate will not serve to shorten the period of rheumatic activity any more than small amounts. Large doses of salicylate will not prevent the development of polycyclic attacks of rheumatic fever.

"3. The routine use of sodium salicylate by intravenous infusion is not warranted by the evidence presented to obtain a rapid elevation of the plasma salicylate level, to maintain a high plasma level, or to affect the fever or sedimentation rate.

"4. If large amounts of salicylate are given, either orally or intravenously, the premonitory signs of toxicity must be recognized early and the dose must be reduced to prevent progression of the symptoms.

"5. It appears that the use of large amounts of salicylate may offer some advantage in the first weeks of therapy and may bring about a rapid reduction of the fever and alleviation of the symptoms; but the continued administration of large amounts of this drug until the sedimentation rate is normal is of questionable value."

—*Am. Heart J.*, 32-311 (September), 1946.

HOSPITAL PHARMACY REGULATION

DATA REVEAL THAT 38 PHARMACY BOARDS HAVE JURISDICTION OVER INSTITUTIONAL PRACTICE, BUT IN MANY STATES LEGAL STANDARDS APPEAR WEAK WHEN COMPARED TO REGULATION OF RETAIL PHARMACY

HOSPITAL pharmacists have been increasingly concerned about what seem to be inadequate legal restrictions on the practice of their specialty in various states. On the following pages the JOURNAL presents a compilation which—probably for the first time—indicates the actual situation on a national basis.

The data are as authoritative as possible, having been secured by the National Association of Boards of Pharmacy from its member boards, at the suggestion of THIS JOURNAL. All state boards (including the District of Columbia) are represented with the exception of Nevada.

It is apparent from the table that more state boards have jurisdiction over hospital pharmacies than commonly supposed. Thirty-eight boards operate under laws which make them responsible for hospital pharmacy regulation, although several of these states only recently have obtained legal opinions which clarify their jurisdiction in this respect. In addition one state, Nebraska, reports a type of control involving both the board of pharmacy and the board of health.

In only four states—Connecticut, Massachusetts, New Mexico and Wyoming—is the regulation of hospital pharmacy entirely in the hands of boards of health. According to the data submitted, none of these states requires that a licensed pharmacist be in charge of the hospital pharmacy at all times.

Four states—Delaware, New Hampshire, Vermont and Virginia—did not indicate that any agency had authority to control the standards in hospital pharmacies. In one additional state, South Carolina, no agency had direct authority although the board of health has general jurisdiction over hospitals. Plans for strengthening the South Carolina pharmacy law are reported to include coverage of hospital pharmacies with requirements for customary safeguards such as permits, professional supervision and minimum equipment.

The problem of obtaining well-defined jurisdiction therefore appears in only five or six states,

indicating that the concern of organized hospital pharmacy may lie principally in the adequacy of laws or their enforcement.

In this regard the data show that 32 states inspect hospital pharmacies regularly on the same basis as retail pharmacies, while 16 do not conduct inspections (1 additional not reporting). Of the 16 there are 7 which do not inspect even though they have jurisdiction: Alabama, Florida, Maine, Maryland, Missouri, Montana and North Carolina.

Of the 48 boards reporting, only 23 issue permits for hospital pharmacies, whereas 36 issue permits for retail pharmacies. (Arizona requires hospital pharmacy permit only if drugs are dispensed to general public.) Upon what logic 13 states base their standards which compel retail pharmacies to have a permit but not hospital pharmacies is not clear. Hospital pharmacists point out that the extent and high level of the institutional practice of pharmacy indicate at least an equal need for the advantages of a permit, with regular inspections and advice on maintaining proper equipment facilities and service.

No Pharmacist on Duty

Perhaps of most interest, both from the viewpoint of public health and of the profession, is the fact that 13 states indicated that it is not necessary for a hospital pharmacy to be supervised by a licensed pharmacist at all times.* In only four of these instances does the pharmacy board assume to have jurisdiction. Elsewhere there is either no vested authority, the responsibility is undetermined, or the matter is under the jurisdiction of boards of health. (Arizona, Missouri and New Jersey laws are applied only if service is provided to out-patients.)

In regard to minimum equipment there is a wide variation of requirements among the states. Only about half the states reporting (23 out of 48 including D. C.) compel hospital pharmacies to maintain minimum standards of equipment. In contrast, 33 states enforce minimum equipment standards for retail pharmacies and 15 do not.

In general, the over-all national picture probably appears brighter than many hospital pharmacists have assumed on the basis of less com-

(Continued on page 548)

* Three others, Arizona, Missouri and New Jersey, require a licensed pharmacist only if out-patients are served. In each of these three special instances the pharmacy board has jurisdiction.

A NATIONAL SURVEY OF THE REAC

KEY: P—Board of Pharmacy; H—Board of Health

	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kans.	Ky.	La.	Maine	Md.	Mass.	Mich.	Minn.	Mont.
(1) Who Has Jurisdiction?	P	P ¹	P	P	P	H	A ²	P	P	P	P	P	P	P	P	P	P	P ³	P	H	P	P	P
(2) Inspected Regularly by Board of Pharmacy	N	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	Y	Y	Y	Y ⁴	Y	N	N	N	Y	Y	Y
(3) Permits Issued for Hospital Pharmacy	N	Y	Y	Y	Y	N	N	N	Y	N	N	N	Y	N	Y	N	N	N	N	N	Y	Y	Y
(4) Permits Issued for Retail Pharmacy	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	N	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y
(5) Are Hospital Pharmacies Compelled to Have Pharmacist in Charge at All Times?	N	Y ¹¹	Y	Y	Y	N	N	Y	Y ³	Y	Y	Y	Y	Y	Y	Y ⁶	Y	N	Y	N	Y	Y	Y
(6) Are Hospital Pharmacies Compelled to Maintain Equipment Requirements?	N	Y	Y	Y	Y	N	N	N	N	N	N	N	Y	Y	Y	N	Y	N	N ⁷	N	N	Y	Y
(7) Are Retail Pharmacies Compelled to Maintain Minimum Equipment Requirements?	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y

Footnotes:

1. State board has jurisdiction if hospital maintains an out-patient department.
2. Opinion of Attorney General being sought.
3. Law requires a licensed pharmacist in hospitals but this provision is not enforced.
4. If a licensed pharmacist is employed.
5. If prescriptions are compounded and dispensed.
6. State Board believes it has authority and is starting to enforce.
7. Though hospital pharmacies are not required to maintain equipment requirements, it is believed that hospitals meet this requirement.
8. Did not reply to questionnaire.
9. State Board has not enforced law since the number of licensed pharmacists required has not been available.
10. Regulation, inspection and registration of hospital pharmacies contemplated.
11. Licensed pharmacist is required only if the hospital has an out-patient department.
12. Permits issued only if hospital has licensed pharmacist.
13. Physician may substitute for pharmacist.
14. Small hospitals have drug room only, with superintendent of hospital in charge.

THE LATION OF HOSPITAL PHARMACY

Board; A—No Vested Authority; N—No; Y—Yes

	N. H.	N. J.	N. M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Oreg.	Pa.	R. I.	S. C.	S. D.	Tenn.	Texas	Utah	Vt.	Va.	Wash.	W. Va.	Wis.	Wyo.	(1)
Mo.	P																						
Mont.	P																						
Neb.	P																						
H																							
Nev.	L																						
N. H.	A																						
N. J.	P																						
N. M.	H																						
N. Y.	P																						
N. C.	P																						
N. D.	P																						
Ohio	P																						
Okla.	P																						
Oreg.	P																						
Pa.	P																						
R. I.	P																						
S. C.	H																						
S. D.	P																						
Tenn.	P																						
Texas	P																						
Utah	P																						
Vt.	A																						
Va.	A																						
Wash.	P																						
W. Va.	P																						
Wis.	P																						
Wyo.	H																						

N	N	N	Y	—	N ¹⁰	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	(2)
N	N	N	N	—	N	Y	N	Y	Y ¹²	Y	N	Y	Y	Y	N	N	Y	N	Y	Y	N	N	Y	Y	Y	N	(3)
Y	Y	N	—	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	(4)
Y	Y	Y	Y	—	N	Y ¹¹	N	Y	Y	Y	Y	Y	Y	Y ¹³	N ¹⁴	N	Y	Y	Y	Y	N	N	Y	Y	Y	N	(5)
N	N	Y	—	N	Y	N	Y	N	Y	N	Y	Y	N	Y	N	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N	(6)
N	Y	Y	—	Y	Y	N	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	(7)

Summary:

Who Has Jurisdiction?

Board of Pharmacy	38	No Vested Authority.....	4
Board of Health.....	4	Questionable.....	2

Inspected Regularly by Board of Pharmacy?

Yes—32; —No—16

Permits Issued for Hospital Pharmacy?

Yes—23; —No—25

Permits Issued for Retail Pharmacy?

Yes—36; —No—12

Are Hospital Pharmacies Compelled to Have Pharmacist in Charge at All Times?

Yes—35; —No—13

Are Hospital Pharmacies Compelled to Maintain Equipment Requirements?

Yes—23; —No—25

Are Retail Pharmacies Compelled to Maintain Minimum Equipment Requirements?

Yes—22; —No—15

(Continued from page 545)

plete information. Yet there are important deficiencies between retail and hospital pharmacy regulation, in a number of areas, that cannot be reconciled with the public health objectives of adequate pharmacy laws.

A particularly incongruous note appears to be struck in those states where the laws or regulations establish one set of standards for pharmacy service to hospitalized patients and a different set of standards for out-patient service.

A definite trend toward more adequate regulation of hospital pharmacy has appeared, both through recent changes in several states and through initiated or contemplated efforts for improvement.

Discussions during recent sessions of the National Association of Boards of Pharmacy at the A. Ph. A. convention, and other evidence, confirm that pharmacy boards are aware of the need for more uniform and adequate hospital pharmacy regulation. The American Society of Hospital Pharmacists, with the support of the AMERICAN PHARMACEUTICAL ASSOCIATION, encourages and promotes more effective control of hospital pharmacy for the benefit of the public and the maintenance of professional standards.

The tabulation of present regulations on pages 546 and 547 should be helpful in clarifying future objectives, in which retail and hospital pharmacists have a common interest.

—R—

LILLY FAMILY IS HONORED BY INDIANAPOLIS PHARMACISTS

The Indianapolis Association of Retail Drug-gists gave a testimonial dinner on October 30 honoring J. K. Lilly, his sons Eli Lilly and J. K. Lilly, Jr., and several business associates. Dr. Robert P. Fischelis, secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, was among the guest speakers. Other talks were given by Governor Ralph Gates of Indiana, Mayor Robert H. Tyndall of Indianapolis, and John W. Dargavel, secretary of the N. A. R. D.

In responding to the presentation of a certificate, J. K. Lilly expressed the view that the honor should probably have been in the other direction, for "if adulation is due we should be the adulators." He recalled with nostalgia the early days when he and his father were struggling with the smallest pharmaceutical house in the world which, through the help of Indianapolis pharmacists and others of the same character, has now grown to be among the largest.

FURTHER TRIALS OF FLUORIDE TO PREVENT CARIES REPORTED

Topical applications of sodium fluoride have been shown to be effective in lowering the incidence of dental caries in children. A further study has been carried out by a group of Minnesota dentists to determine the minimum number of treatments necessary to achieve maximum results.

Three groups of children between the ages of six and twelve, in three different Minnesota communities, were treated over a period of two years. A total of 977 children received topical applications of sodium fluoride on their teeth. The treatment—after prophylaxis and a detailed dental examination—consisted of isolating with cotton rolls the teeth to be treated, drying them with compressed air and applying to the crowns of the teeth, by means of a cotton swab, a 2% solution of sodium fluoride. The teeth were kept free of saliva and the mouth held open for four minutes after application, permitting the solution to dry on the teeth. Where more than one treatment was administered, the treatments were given one week apart.

Only the teeth in half of the mouth of each child were treated. The teeth in the untreated half of the mouth were used as controls.

The experiments differed in each of the three communities by varying the number of applications of sodium fluoride solution. After one year, the same dentist checked the teeth of each child recording any new decay. At Hibbing, children were given one treatment with a reduction of only 4.9% in dental decay. At Chillholm, children received two treatments with a reduction in dental decay of 14.5% among deciduous teeth. At Virginia, where children received three treatments, 40% less decay was found a year later in treated deciduous teeth as compared with the untreated teeth. The reduction of decay among permanent teeth treated was 21%.

As a result of these studies, the dentists concluded that to achieve best results, the minimum number of treatments needs to be four or more, but fewer than eight.

—R—

Pharmacist and ballerina is the unusual professional combination practiced by Carla Bradley of Chicago. Manager of two pharmacies, she uses part of her income to support Chicago's Ballet Repertory group, in which she stars and coaches. Two sisters are also pharmacists.

IS THE TREND UP OR DOWN?

by MARTIN E. ADAMO

BOSTON, MASS.

AT ONE time it was said that we Americans are people who live in cycles. Now it is said we are a people of trends. There is no evidence that pharmacy is a profession of cycles. It is subject to trends. Pharmacy has been in the midst of a trend—a trend away from professionalism.

Our leaders in pharmacy have been crying: Save professional pharmacy. It almost has been like a cry in the wilderness, for everything in pharmacy seems to have gone in the opposite direction. While on one side there have been gains in the past few years, we hear on the other side *that our way of life requires pharmacy to change its conservative aspect.*

Now I appreciate that there is a difference, in fact if not in law, between the pharmacist and the retail druggist, just as there is a difference today between the pharmacy and the retail drugstore. Yet I do recognize that both have a relationship in common, and one that is vitally essential to both. The drugstore without the pharmacist is no longer a drugstore, and perhaps it is true that the pharmacist, in many instances, cannot live today without the drugstore and its customary side lines. An analysis of such a drugstore quickly establishes the fact that the drugstore becomes just another store if we remove the pharmacist and eliminate true pharmacy. The consumer's attraction to the drugstore is in the main brought about and indeed fostered by the fact that it is also a pharmacy. Let this drugstore lose its pharmaceutical aspect and it immediately loses its powerful attraction to those who repose their confidence in the man known as the pharmacist.

These facts are inescapable and unalterable. Yet, in spite of all this, what is the trend in pharmacy? Is it a trend to perpetuate or indeed save the professionalism of pharmacy? Is it a trend to build up the very power and force which identifies the drugstore with its essential purpose? No, the trend still seems to be away from all this. Some segments of pharmacy appear to be doing everything possible to minimize the very thing we must perpetuate if we are to maintain a profession of pharmacy as such. The courts, up to now, have held pharmacy as prac-

A CHALLENGING DISCUSSION OF THE DRUGSTORE'S DILEMMA, IN WHICH A PRACTICING PHARMACIST FORESEES INCREASING PROBLEMS FROM DEEMPHASIS OF THE BASIC FUNCTION OF RETAIL PHARMACY

ticed in our drugstores to be one of the learned professions. How long this position will be maintained by the courts may be conjectural. Some of us seem to be trying boastfully to make our present position untenable.

Within a few weeks, two leading national periodicals published articles about a leading organization of chain and agency drugstores. *Life* magazine devoted several pages to the "success" story of the president of this organization and his plans to sell anything in the drugstore which the public will buy. In spite of the public's bewildered query, "What next in the drugstore?" his announced policy is to submerge further pharmacy's basic function. Such has been the trend, and this "drug leader" proposes to pioneer in carrying the trend to a new high.

In another periodical appears a typical reaction to this trend. The hardware dealers of America expressed through a spokesman their plan to stock packaged medicines and all drugs that can be sold under the law, and if necessary seek drug licenses too. The simple, even though fallacious, argument was that if drugstores can sell hardware, why can't the hardware stores sell drugs? In Boston recently, the head of a leading department store said that the drugstore has been converted from the medicine shop to the department store and that the competition was real. Indeed, a complaint was made to the police that many drugstores were selling so many department store items on Sundays that a serious situation had developed, and the police were asked to intercede.

Whither are we bound under this trend, and what shall we do about it? Clearly the red lights are up and yet some of us remain green and oblivious to it all. It cannot be questioned that the average modern drugstore is a far cry from the chemist's shop or the apothecary shop. Nor can

Presented to the Section on Education and Legislation of the American Pharmaceutical Association, Pittsburgh meeting, 1946.

one question the fact that most of the present number of drugstores cannot operate profitably by the compounding of prescriptions alone. We have come to accept, however reluctantly, the American trend to supplement the income of the pharmacy by the sale of ice cream, tobaccos and periodicals. But does this trend require the sale in drugstores of hosiery, clothing and hardware? Do the American people want, like or expect to find these commodities for sale in the drugstore? Or are the druggists of America, under the guise of pharmacy, taking advantage of the profession's prestige to establish a different sort of institution, and in the process destroying the very thing that gives them their special privileges and status before the public?

Seeking a Solution

All this, it seems to me, is the great problem of pharmaceutical legislation today. What shall we do to curb this trend away from professionalism? What are our plans to curb this radical departure from what we hope the true American pharmacy or drugstore shall be? Shall we seek laws to compel the change? Can we, by such methods, secure the change? Do we accept this challenge to our status and plan to do something about it, or are we helpless? Some place and somewhere there must be a line of demarcation. And the establishment of that line is the responsibility of the leaders in pharmacy.

It may be that our state legislative bodies will take a hand in this situation and force the issue, for already grumbings are being heard in legislative halls complaining that druggists are getting preferential and protective treatment as a protection to public health, and then using this protection to compete unfairly with others.

It has been universally accepted that the drugstore or pharmacy is a health center in the community which it serves, and that it shares responsibility with the physician. It is generally agreed that because the pharmacist dispenses dangerous drugs and compounds the physician's prescriptions he is entitled to certain preferential consideration, reflecting requirements of professional attainment and legal standards of practice. There should never be any question of the need for such regulation—only the question of whether it is not in the public interest to extend these requirements to the sale of all products intended for therapeutic use. But legislators logically complain that many druggists use this preferential consideration to the disadvantage of ordinary merchants in the community.

For example, in some areas the sale of liquor in drugstores has reached the competitive point where the alcoholic beverage industry protests unwarranted differentials which have been allowed in license fees. Elsewhere department stores complain that drugstores are allowed to remain open and carry on a general department store business on the Lord's Day while they are compelled by local law to remain closed. Others complain that in many instances drugstores are primarily eating places, and that pharmacy is an incidental part of their operation.

Pharmacy boards may soon be confronted with the problem of being unable to deny drugstore permits to department stores and other merchandising institutions if we cannot sharply reverse the trend which created the present situation. We cannot on the one hand claim that we *alone can function pharmaceutically as health institutions* and thereby receive special consideration by our legislators, and on the other hand nullify this very argument by becoming general stores. We cannot have our cake and eat it too.

Any further trend toward a "super-drugstore" that deemphasizes pharmacy would increase the possibility of ill-advised legislation, vitally affecting both pharmacy and the public, which would drive out of existence many community drugstores as such. It has been suggested that perhaps the solution will be forced on us by creating legislative differences between the retail drugstore and the pharmacy, the former to carry on a restricted retail drug business and general operation without the protection of legislation, and the latter to be conducted professionally with legislative protection based upon public health.

What is the logical plan for pharmaceutical legislation in our modern way of living? Shall we strive for uniform drug laws and uniform educational standards for licensure and all the while neglect the conflagration that tends to destroy the very house which we seek to regulate?

—R—

PHARMACISTS EXHIBIT AT MEDICAL MEETING

Exhibits on the U. S. Pharmacopœia XIII, National Formulary VIII, and New and Nonofficial Remedies were displayed by the Indiana Pharmaceutical Association at the annual meeting of the state medical association. The project was sponsored by the I. P. A. Professional Relations Committee, which also distributed literature to the 1480 physicians in attendance.

Science News Capsules

LESS TIME RECUPERATING from surgical operation or serious illness results from use of a bland diet consisting of a suspension of powdered egg and powdered milk. This diet sped Army wounded and postoperative patients back to duty in about one-third the average time, according to Dr. Herbert Pollack of New York, formerly chief medical consultant for the Army in the European theater. Advantages of the mixture are high protein content, high caloric value from the fat and carbohydrate content, and lack of irritation to stomach and intestines.

AMEBIASIS appears to be one of the few tropical diseases likely to be spread through the United States by returned servicemen. An indication was the report from New York City's tropical disease diagnostic service showing a 10% incidence among 1151 veterans routinely examined, a percentage much higher than the general level of infection expected in a city such as New York.

ABOUT 25,000 YEARS AGO man had already inhabited North America. New evidence supporting this belief is the finding of a flaked stone artifact at the National University of Mexico and several skeletons, believed to be in the 25,000-year bracket, reported from the University of California.

D-D, the designation for a mixture of dichloropropane and dichloropropene, is proving as remarkably effective against underground nematodes as DDT has been against insect pests. Tests of the new soil fumigant have been uniformly successful in controlling the "threadworms" which may attack underground parts of practically all plants. Root vegetables thus affected are said to have "root knot." D-D has proved valuable in specific tests with potatoes, sugar beets, tomatoes, green beans, carrots, tobacco; a host of flowers, particularly bulb species; and such fruit trees as peaches, oranges and grapefruit.

ACUTE CORONARY THROMBOSIS attacks may be safely prevented by continuous use of dicumarol, early reports indicate, if careful tests are made frequently to be certain the blood has not lost too much clotting ability.

BLUE COLOR OF THE OCEAN is attributed to more than a million dust-like particles in every cubic inch of clear ocean water. These particles, revealed only by an ultra-microscope, reflect filtered light back to the ocean surface. The water absorbs the red and yellow colors of light, leaving greens, blues

and violets, with a common denominator of indigo-blue characteristic of deep ocean water.

EYES BURNED BY CHEMICALS can usually be saved by an operation which denudes the cornea of its outer layer. This new treatment is reported to the Industrial Hygiene Foundation by Dr. Ralph S. McLaughlin of South Charleston, W. Va. Corneal damage which indicates the denuding operation is revealed by a green stain when fluorescein is dropped into the eye. For best results in this as in other treatments, the patient should reach the ophthalmologist within two hours after receiving the burn. Dr. McLaughlin calls a delay of more than six hours "unforgivable."

FOR THE FIRST TIME in the world's history, a 200,000,000-electron-volt beam of deuterons has been produced, the result of an experiment with the new 4000-ton supercyclotron at the University of California.

GRAFTING AN ADRENAL GLAND from a patient of the "bearded lady" type has cured a case of Addison's disease. During the fourteen months since the operation to transplant the overactive adrenal gland, the patient has been well and no longer takes salt or hormone injections.

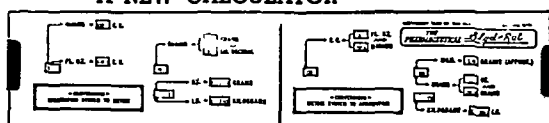
MOST POWERFUL of reciprocating aviation engines in the world today is the U. S. Army's new 5000-horsepower aircraft engine, which consumes gasoline at approximately 580 gallons an hour when operating at maximum speed and power.

UNSUSPECTED COLDS IN INFANTS are probably the cause of many of the 1600 deaths a year which are now attributed to accidental suffocation by blankets or other mechanical means. Investigating 200 cases of alleged suffocation of infants in crib or carriage, the New York chief medical examiner's office found that two-thirds of the babies had acute inflammation of the nose and throat associated with other signs which are conspicuously absent in healthy infants dying of proved suffocation.

THE MOUSE'S SQUEAK in response to a small electric shock is being used to evaluate the strength of analgesic drugs at Wellcome Research Laboratories in Tuckahoe, N. Y. Following administration of the drug, its effectiveness is measured by the number of 15-volt electric shocks which can be given to the mouse's tail before the mouse squeaks.

ABOUT A MILLION PLANTS are now known to botanists and probably at least another million

A NEW CALCULATOR



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plant species await naming and exact description. Work on the remaining task is important to the progress of plant sciences such as pharmacognosy, agriculture and horticulture.

TUBERCULOSIS TREATMENT with streptomycin is being tested on a nation-wide scale by the National Tuberculosis Association. However, it is not believed that streptomycin can substitute for present methods of sanatorium treatment and surgical therapy.

CHANCE FOR SURVIVAL of the diphtheria patient largely depends on the day of the disease when antitoxin is first given, Dr. Franklin H. Top of Detroit emphasized in a report at the meeting of the American Public Health Association. Cases of the gravis type can be cured by antitoxin if it is given early enough and in large enough doses. Penicillin may be useful in treating complications of diphtheria, but cannot replace antitoxin for the primary treatment. Alum-precipitated toxoid was named as the preventive of choice.

ETHYL SILICATE mixed with pigments such as ochre, sienna, chromium oxide, titanium oxide and carbon black produces paints which resist heat, retard fire and do not darken with age, researchers of the Mellon Institute reported to the American Chemical Society. The new paints are expected to be particularly useful for protecting and decorating theatrical scenery, industrial fabrics, and the walls and chimneys of chemical plants.

STRATOSPHERE ROCKETS can be tracked throughout their flight by a radio method just disclosed by the Army. As the rocket is launched, a station of very high frequency broadcasts waves that are picked up by a receiver in the rocket and rebroadcast at double frequency. By measuring the Doppler effect physicists locate the position of the rocket within a tolerance of six feet.

THE FIRST ADULT SURVIVOR of toxoplasmosis has been reported from the University of Rochester School of Medicine and Dentistry. Only one other patient, a child, is recorded in medical annals as having survived an invasion by the large one-celled parasites.

AN ELECTRONIC "SUPER BRAIN" that will solve complex mathematical problems a million times faster than the best methods available ten years ago is predicted. Substitution of electronic tubes and electrical circuits for the cogs and gears of mechanical devices hitherto in use makes it possible for such machines, operating with the speed of light,

to "remember" and carry over data for further operations.

PSYCHOLOGICAL THERAPY, as well as treatment for physical symptoms, is indicated for victims of ulcers. From a study of 62 male ulcer-patients at the University of California, it is concluded that faulty upbringing is behind some cases of ulcers, which results in a breakdown when these patients are unable to cope with a complex situation in adult life.

RUSSIA'S FIVE-YEAR PLAN to improve health conditions in the U. S. S. R. includes the use of bacteriophage for combating diarrhea in children, the Kluyeva-Roskin "solvent" treatment for cancer, BCG anti-tuberculosis vaccine for use on infants, management of neuro-psychological cases, and the physical and mental rehabilitation of war veterans.

MENTAL ANGUISH as well as physical pain may be relieved with anesthetics, making it possible for the psychiatrist to probe the mind "painlessly."

LOCATION OF THE NORTH MAGNETIC POLE, now in question among scientists, is believed to have moved at least two hundred miles north and a little east or west since 1904. Frequent observations in the area are now being made from a U. S. Army B-29 to determine the most accurate picture of the imaginary pole's location.

RED BLOOD CELLS of rabbits and other animals is the source of erythrin, a new antibiotic which is now being tested clinically for use against diphtheria in Russia.

ELECTRONIC COLOR TELEVISION has been developed on an experimental basis and is expected to be available to the public within a few years. It is a complete departure from television in mechanical color, which has been shown in various forms in the past. Radio officials claim that present television receivers could be easily adapted to receive broadcasts of electronic color images in black and white during the period of transition from black-and-white to color television sets.

THE "MAD HATTER" has disappeared for good. His proverbial madness, characterized by tremors and mental disturbances, was recognized years ago as mercury poisoning. It was due to the use of mercury as a carroting agent to improve the felting properties of animal pelts. Since then, better ventilation and housekeeping in the industry cut down incidence of toxic reactions, and use of mercury was banned entirely as other carroting agents became available.



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TEST FOR HISTOPLASMOSIS

We have an inquiry for histoplasmosis skin test. Will you please send us any information regarding sources of this product?—A. S., Kansas

The skin test for histoplasmosis is a new diagnostic technique for this particular fungus disease, regarded at this time as having questionable value. The reaction obtained is not specific, but may be helpful in connection with other diagnostic procedures.

Limited quantities of the test solutions, prepared from cultures of *Histoplasma capsulatum*, are available from the National Institute of Health. Probably the physician will also wish to have conducted cultural studies of the sternal bone marrow and the blood. For intradermal test material and for advice concerning this often puzzling and usually fatal disease, the physician should write to Dr. Charles Armstrong, chief, Division of Infectious Diseases, National Institute of Health, Bethesda 14, Md.

A NEW SARCOPTICIDE

We are asked by one of our physicians to supply Zyclophen ointment for scabies. Can you tell us where to obtain this ointment or its ingredients?—M. H., Maine

Zyclophen is the name given by the U. S. Standard Products Company of Woodworth, Wis., to an ointment containing 4-chloro-3,5-dimethylphenyl hydrogen-*dl* camphorate, ortho-phenylphenol, anhydrous lanolin and white

petrolatum. The product is not available for prescription use at this time, but is being tested clinically. As soon as sufficient clinical evidence has been obtained, we understand that a new drug application will be filed with the Food and Drug Administration.

A reference to Zyclophen appears in *The Journal of Pediatrics*, 29:189 (August, 1946), titled "The Treatment of Scabies in Children with a New Sarcopticide," by Dr. T. J. McElhenny, Austin, Texas.

WHAT IS NAFTALAN?

We have a local doctor who has asked us to get some Naftalan for him. He wishes to prescribe it in an ointment base for ringworm of the scalp. What is the source of this product?—J. S., Kansas.

Naftalan or naphthalan is a greenish-black soft mass obtained from fractional distillation of naphtha secured from the Armenian highlands. This product was off the market during the war, however, and to our knowledge is not currently available. Its range of usefulness is said to be analogous to oil of cade. A typical dermatologic formula is as follows:

Naftalan.....	50%
Zinc oxide.....	25%
Starch.....	25%
Menthol.....	2-5% (optional)

We understand that certain products have been introduced as replacements for naftalan, such as Alinaphzone, Edzone Chemical Company,

Box 95, Robbinsdale Station, Minneapolis 12, Minn.; and Dernaftan, Vacro Products, 169 35th Avenue, Flushing, L. I. N. Y.

WHAT IS WETTABLE SULFUR?

We would like to know what wettable sulfur is and where it may be obtained?—M. B., New York

Wettable sulfur is sulfur incorporated with a small amount of wetting agent. It is manufactured by such firms as E. I. duPont de Nemours and Co., Inc., Grasselli Chemicals Department, Wilmington 98, Del.; the Dow Chemical Company, Midland, Mich.; and the General Chemical Company, 40 Rector Street, New York 6, N. Y.

FAGARINE, A CARDIAC DRUG

A product called "Fagarine" was mentioned in your Journal. I would like to know the original reference and also where the drug can be obtained?—P. A., New York

Fagarine is an alkaloid from the Gagara coco tree, growing in northern and central Argentina. The original paper appeared in *Science*, 102: 69, 1946. The address of the senior author is: Venancio Deulofeu, Laboratory of Organic Chemistry, Facultad de Ciencias Exactas, F. y N., University of Buenos Aires, Argentina.

To our knowledge, this alkaloid is not available on the American market. Reported experiments in dogs and humans seem to indicate that alpha fagarine has cardiac effects similar to those of quinidine, which has been in short supply, and might be employed as a substitute.

PENICILLIN SUPPOSITORIES

We are taking advantage of the Prescription Information Service by asking for a formula of a proper suppository base for penicillin 100,000 units.—M. C., Ontario, Canada

It is generally conceded that the use of rectal suppositories of penicillin in any form is ineffective and irrational and therefore should be discouraged. This stems from the fact that penicillin is inactivated by the enzyme penicillinase, which is produced by *E. coli* and other organisms which inhabit the lower intestine.

In certain circumstances, the physician may logically prescribe vaginal suppositories of penicillin. One formula for vaginal suppositories was given in the October, 1945, issue of *THIS JOURNAL*.

Typical Days

FROM THE SECRETARY'S OCTOBER DIARY

—2nd—

EARLY to the local C.P.A. office where construction projects are approved to discuss our memorial flagstaff project, and found the authorities sympathetic and helpful since it takes no materials from veterans' housing.

A busy morning at the desk and then on the noon train to Philadelphia, where the American Hospital Association is in session and the American Society of Hospital Pharmacists has arranged an exhibit using our N. F. charts as a basis. Found Francke, Zuglich, Levin and others active in telling visitors the story of hospital pharmacy; also met many friends among the commercial exhibitors.

To the Benjamin Franklin Hotel for dinner with the Philadelphia Hospital Pharmacists Society and addressed them on the importance of their function to society and to pharmacy. A fine group, enthusiastic about their work and their future. Reached Washington at 12:15 a. m., counting the day well spent.

—3rd—

Most of this day working with the Committee on Uniform Laws of the National Drug Trade Conference at our own building, and making good headway on barbiturate and other legislation. A seven-hour session broken only by a sandwich lunch in the middle of the day. This is really a hard-working committee. Working late at the office after the evening meal and then for some conferences with Swain and Moudry at the Washington Hotel until 1 a. m.

—4th—

Meeting Don Francke at Trenton, N. J., early this morning and then by automobile to Red Bank to spend the day reviewing hospital pharmacy matters, and discussing pharmaceutical topics with a group of distinguished ophthalmologists. Later a ride along the North Jersey shore, stopping at Long Branch Memorial Hospital, but finding the efficient hospital pharmacist, Geraldine Stockert, taking a well-earned Sunday off. Back to Trenton where Francke left for Michigan and we boarded the 7:33 for Washington.

—5th—

Early to the physician's office to ask advice on what seems like an infected toe, and he confirmed the suspicion, insisting on 48 hours' rest and continuous hot saline applications.

—10th—

Still nursing the infected toe but noticing im-

provement. The secretaries are bringing and taking away the work so that little time is being lost, although the convenience of others suffers through the extra chores. Fortunate indeed is the administrator who can count on the unusual from his staff when emergencies arise and *we* are fortunate.

—11th—

Now another early morning visit to the physician and much relieved to have him say we can leave for Chicago this afternoon as planned. Most of the day at the office clearing up last-minute details, and then on the B. & O. to Chicago for a series of meetings.

—12th—

To the Stevens Hotel in the Windy City for the usual registration ceremonies and early room assignment which is temporary. And now comes Pat Costello in his car to take us, with President Serles, to Evanston and then to Milwaukee. To lunch at the Schroeder Hotel and later meeting Wisconsin Board Secretary Sylvester Dretzka and Wisconsin Ph. A. Secretary Jennings Murphy, the Convention Bureau director and the manager of the hotel. A complete survey of the convention facilities satisfied President Serles, N. A. B. P. Secretary Costello and the A. Ph. A. Secretary that Hotel Schroeder will offer acceptable convention facilities for our annual meeting in August of 1947.

Following brief visits to the well-conducted offices of the Wisconsin Ph. A. and the Wisconsin Board of Pharmacy, returning to Chicago by way of Glencoe, where Vice-President Adams was visited, in his beautiful pharmacy.

—13th—

Spent an hour discussing A. Ph. A.-A. S. H. P. matters with President Hansen of the Hospital Pharmacists' Society this fine Sunday morning in his well-conducted pharmacy at Grant Hospital, and then to dinner at the Stevens.

Later to meet Dean and Mrs. Serles who took us to their beautiful Oak Park apartment, where Pat and Mrs. Costello joined us for the start of a trip to the Morton Arboretum. This is one of Chicago's nearby show places and an institution for practical education in botany, as well as a delightful place for recreation. Fortunate indeed is the School of Pharmacy of the University of Illinois in having made available to it a section of these beautiful grounds for an experiment station in drug plant culture and related activity; another tribute to the farsighted planning of Dean Serles, Elmer Wirth and their staffs.

And now back to the Serles domicile to enjoy a fine evening meal, product of Mrs. Serles' culinary art, with Mesdames Costello, Fischelis and Serles and their more or less distinguished husbands making up the party. Later dealing with necessary A. Ph. A. affairs with President Serles and then back to the Stevens for the night.

—14th—

All day at the Bismark Hotel, joined by President Serles and Council Chairman Beal, representing

the A. Ph. A., to discuss the affairs of pharmacy with President Kohl, Secretary Dargavel and Executive Committee Chairman Moudry of the N. A. R. D., this being the Interim Committee of the two national associations, which prepares the program for the annual Joint Meeting of the A. Ph. A. Council and the N. A. R. D. Executive Committee, scheduled this year for November 23. Long discussions on plans for National Pharmacy Week, barbiturate legislation, Army Pharmacy Corps legislation, and other joint committee activities. At 4:30 on the Capitol Limited for Washington, listening en route to President Truman's speech taking controls off meat.

—16th—

In the morning came Pharmacy Director Briggs of V. A. to talk of Civil Service rulings and other matters affecting the status of pharmacists in government service. At 1 p. m. to Baltimore with Drs. Powers and Green to see Dr. Dunning on ophthalmic solution research plans and then to the University of Maryland Medical School for commemoration of the centennial of the administration of ether in surgery, ably presided over by Dr. John C. Krantz. Later in the evening to dinner at the Dodge Hotel in Washington with J. S. Mordell.

—17th—

An interesting session with Congressman Durham and the Steering Committee of the Committee on Status of Pharmacists in the Government Service, to which Major Aabel of the Office of the Surgeon General was later invited. Fortunate indeed is the Committee to have the advice of Congressman Durham, who piloted the original legislation through the Committee on Military Affairs, of which he has been a member for many years.

—18th—

A quick trip to New York and back, principally to confer with Elmer Bobst who stands high in the councils of the American Cancer Society, having been the dynamic chairman of its Executive Committee when its greatest fund-raising program was launched.

—19th and 20th—

Most of this Saturday and Sunday at the office with a few faithful aides who worked day and night to dispose of many matters in anticipation of a tough schedule in the coming weeks. On Sunday at 4:30 p. m. boarded the "Birmingham Special" on the way to Alabama.

—21st—

Met by Alabama Ph. A. President Smith on arrival at 12:50 p. m.—five minutes ahead of schedule, which is tremendous for the Southern Railway. Straight to the Thomas Jefferson Hotel where the Board of Pharmacy was in session and where competent Secretary and splendid hostess, Thelma Morris Coburn, had arranged for our comfort in the best traditions of Southern Hospitality.

Later in the afternoon with President Smith to the Howard College campus, where the pharmacy student body gathered with Dean Richards and

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||||| TINCTURE OF IODINE |||||

Mild Tincture of Iodine may be prepared as follows:

Iodine 20 Gm.
Sodium Iodide 24 Gm.
Diluted Alcohol, a sufficient
quantity, to make 1000 cc.

Dissolve the iodine and sodium iodide in a sufficient quantity of diluted alcohol to make product measure 1000 cc.

SOLUTION OF IODINE U. S. P. XII

Iodine 20 Gm.
Sodium Iodide 24 Gm.
Distilled Water, a sufficient
quantity, to make 1000 cc.

Dissolve the iodine and sodium iodide in 50 cc. of distilled water, then add sufficient distilled water to make the product measure 1000 cc.

Parke, Davis & Co.
Pharmaceutical Division, Inc.

120 Broadway, New York 5, N. Y.

other faculty members in the auditorium to listen to our address on the A. Ph. A.; a fine group of young men and women who will eventually mean much to the future of pharmacy in Alabama.

And now back to the Thomas Jefferson for dinner with the Legislative Committee of the Alabama Pharmaceutical Association and the Board of Pharmacy and later reviewing the legislative program for 1947 which is progressive, sound and greatly in the public interest.

—22nd—

Meeting today with the Allied Health Council of Alabama, brain child of T. M. C. and co-workers and including medicine, dentistry, nursing, hospitals and pharmacy. A good array of talent and an audience of public-health-minded representatives of civic, social and professional organizations intent on being helpful and working constructively. It was a pleasure to lay before them the facts showing the extent to which the pharmacist belongs in this public health picture.

And now before leaving Birmingham for points north and east, a surprise dinner with T. M. C. and Mrs. Legree as hosts; truly a perfect ending for a delightful day and a half spent with these earnest workers for the advancement of pharmacy.

—24th—

This morning an hour's conversation with Dean Christensen at Ohio State University on the way to Johnstown, Pa. Much bad luck making train connections at Pittsburgh but managed to reach Johnstown where Wertz and McKinstry whisked us away to Cresson, Pa., for a tri-county meeting of Blair, Somerset and Cambria, all gathered at 10 p. m. to hear more about the A. Ph. A. By auto to Altoona in time to board a train for Washington at 1:10 a. m.

—25th—

This time the P. R. R., due in Washington at 7:15 a. m. arrived at 7:10. They never run late when an extra hour of sleep would be possible. So, on to the Hotel Washington and found the strike still on, with bed unmade just as we left it last Sunday, but there was hot water for a bath and shave and still one clean towel, so we felt better by the time office hours rolled around.

—26th and 27th—

And now working furiously on the proofs of biographies to go out with the ballots, the printer having the usual difficulties with help. On Sunday afternoon to the dedication of the new Memorial Laboratory of the U. S. Public Health Service at Bethesda; an impressive ceremony with Surgeon General Parran—unfortunately detained in Boston by serious illness of his son and the grounding of planes—arriving before the close of ceremonies. At midnight on the sleeper to New York.

—28th—

Arriving in New York at 7. After breakfast, a long-standing engagement with the dentist in Newark; then to Dr. Swain's office in New York with A. K. Barta to discuss the uniform pharmacy act until noon. Luncheon at the Metropolitan Club

with the Committee on Pharmacy Week and a committee from the American Cancer Society; making good progress in bringing these groups together for the planning which will lift 1947 Pharmacy Week to a high level of public health achievement.

At 3 p. m. with Tom Rowe by auto to Rutgers University College of Pharmacy in Newark where the student convocation was addressed on "Pharmacy—A Profession for Men and Women of Character." Later a meeting with the officers of the Student Branch here, and an able, alert group they are, sparked by Prof. Ulan. After dinner with the officers of the Northern New Jersey Branch, A. Ph. A., addressed this progressive group at the College of Pharmacy and answered some questions. Happy to see so many former New Jersey co-workers at this meeting, especially Harry Bischoff.

Now back to New York for the midnight sleeper to Washington and glad to call it a day, albeit there was much to look back upon that will be stimulating for the days and weeks ahead.

—29th—

A full morning at the desk and then to lunch at the Cosmos Club with Drs. R. C. Williams and L. L. Anderson of U. S. P. H. S., talking over hospital pharmacy problems. All afternoon with the staff and secretaries, laying out essentials for the balance of the week. At 8:10 p. m. on the "American" bound for Indianapolis and Chicago and forgot it carried no diner, but the club car steward managed to dig up a minced ham sandwich or two.

—30th—

Arrived Indianapolis at 11:30 a. m. and found a room at the Columbia Club all set through the foresight of Al Fritz, able secretary of the Indianapolis Retail Druggists Association. After lunch a visit with President Eli Lilly and other executives of this great organization at their plant. The newly acquired quarters add much floor space to the manufacturing facilities. Later to meet Al Fritz, John Dargavel and others come to participate in the tribute to the Lilly family and Eli Lilly & Co. by the Indianapolis Retail Druggists Association. This was a delightfully arranged dinner party at the Columbia Club, with presentation of a suitably inscribed tribute to J. K. Lilly, Sr. At the head table were the governor of Indiana, the mayor of Indianapolis, the secretaries of the A. Ph. A. and N. A. R. D., the president and secretary of the Indianapolis Retail Druggists Association and J. K. Lilly, Sr. All but the latter spoke in tribute to the Lilly family and the firm of Eli Lilly & Co. But it was J. K. Lilly, Sr., at the age of 85—as mentally alert as ever and with that splendid capacity for fitting every occasion with the correct expression of sentiment in beautifully chosen language and with a wonderful memory for names and occasions—who held the center of the stage and impressed the gathering most. One of those fine occasions which one would hate to miss.

NVR

PRODUCTS RECENTLY ACCEPTED BY THE
A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY

Council descriptions of drug products are published regularly in This Journal as they are accepted. Rules upon which the Council bases its action appeared in the July (7-320) 1946 issue and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago.

THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1946, p. 395).

The following dosage forms have been accepted:

THE HARROWER LABORATORY, INC., GLENDALE 5, CALIF.

Tablets Aminophylline: 0.1 Gm.

THE VALE CHEMICAL CO., INC., ALLENTOWN, PA.

Tablets Aminophylline: 0.1 Gm. and 0.2 Gm.

SULFADIAZINE (See New and Nonofficial Remedies, 1946, p. 181).

The following dosage forms have been accepted:

THE HARROWER LABORATORY, INC., GLENDALE 5, CALIF.

Tablets Sulfadiazine: 0.5 Gm.

THE VALE CHEMICAL CO., INC., ALLENTOWN, PA.

Tablets Sulfadiazine: 0.5 Gm.

ESTROGENIC SUBSTANCES (See New and Nonofficial Remedies, 1946, p. 443).

The following additional dosage form has been accepted:

THE SMITH-DORSEY CO., LINCOLN, NEB.

Solution of Estrogenic Substances (in Persic Oil) with Benzyl Alcohol 3%: 1-cc. ampuls available as 5000 international units per cubic centimeter, 10,000 international units per cubic centimeter and 20,000 international units per cubic centimeter and 10-cc. ampuls available as 10,000 international units per cubic centimeter and 20,000 international units per cubic centimeter.

PENICILLIN OINTMENT.—A mixture of sodium or calcium penicillin in an ointment base composed of white petrolatum, liquid petrolatum, lanolin or any mixture of these with or without the addition of white or yellow wax and vegetable oil.

Actions and Uses.—Penicillin ointment is useful in the treatment of superficial infections of the eye involving the cornea, conjunctiva, meibomian glands and lacrimal sac caused by organisms susceptible to penicillin. It may be employed for topical

application to burns of the skin to control infection. It may also be used for superficial infections of the skin such as impetigo, provided the infecting organism can be demonstrated to be penicillin sensitive.

Dosage.—Apply locally one or more times a day as the condition indicates. If indicated, supplement treatment with parenteral or oral administration of penicillin.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Penicillin Calcium Ointment: 30-Gm. tubes. Each gram contains 1000 units of penicillin calcium in white petrolatum, U. S. P.

Penicillin Calcium Ophthalmic Ointment: 4-Gm. tubes. Each gram contains 1000 units of penicillin calcium in a base consisting of white petrolatum, U. S. P., 80 per cent and liquid petrolatum, U. S. P., 20 per cent.

E. R. SQUIBB & SONS, NEW YORK

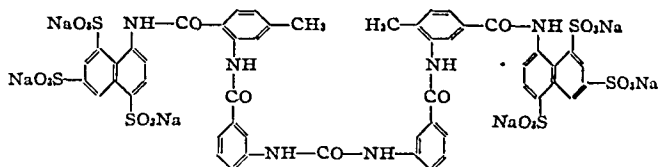
Penicillin Calcium Ointment: 14.5-Gm. tubes. Each gram contains 1000 units of penicillin calcium in a base consisting of beeswax, peanut oil, petrolatum and anhydrous lanolin.

WINTHROP CHEMICAL CO., INC., NEW YORK

Penicillin Calcium Eye Ointment: 3.54-Gm. tubes. Each gram contains 1000 units of penicillin

calcium in a base consisting of white petrolatum, U. S. P., 60 per cent and liquid petrolatum, U. S. P., 20 per cent and lanolin anhydrous, U. S. P., 20 per cent.

NAPHURIDE SODIUM.—Suramin Sodium.—Hexasodium bis - (*m*-aminobenzoyl - *m*-amino- γ -methylbenzoyl-1-naphthylamino-4,6,8-trisulfonate) carbamide.— $C_{51}H_{34}O_{23}Na_6S_6$.—M. W. 1429.18. The structural formula of naphuride sodium may be represented as follows:



Actions and Uses.—Naphuride sodium is a trypanosomicide which readily dissolves in sterile water; the solution is neutral in reaction, odorless and almost tasteless. Only freshly made solutions should be employed. It is slowly eliminated and remains active in the body for a considerable period, offering several months' protection against reinfection with the trypanosomes of both forms (Gambien and Rhodesian) of African sleeping sickness. It is claimed to produce excellent results in the first stage of trypanosomiasis and a favorable influence in the second stage of the disease. It is said to be of particular value in the prophylaxis of sleeping sickness. While the drug is relatively safe when properly used, it exerts an irritant action on the kidney; even after comparatively small doses there is frequent occurrence of albumin and sometimes hyaline and granular casts and red blood cells in the urine. However, albuminuria generally disappears spontaneously in about six weeks. The drug should be used only with great caution in patients with renal insufficiency and albuminuria, since severe nephritis, amblyopia, amaurosis and anuria have been noted. In larger doses naphuride sodium may have a hemolytic action. Occasionally dermatitis, chill, fever, headache, nausea and pruritus may be noticed, and more rarely, conjunctivitis, stomatitis, cutaneous hemorrhages, globinuria and agranulocytosis. Since the compound is slowly eliminated and has a cumulative action, side effects may appear after cessation of treatment. The drug should not be continued in patients who show intolerance to initial doses. During treatment daily urinalysis and determination of blood pressure has been suggested, as have frequent complete blood counts, determination of nonprotein nitrogen content of the blood, and determination of the potassium, sodium and chloride content of the blood, so that degeneration of the adrenal cortex, if it occurs, may be detected early.

Dosage.—Naphuride sodium is usually administered intravenously in a freshly prepared 10 per cent solution. If a venipuncture is impossible, the solution may be injected intramuscularly. During the preparation of a solution, the powder is sprinkled

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to avoid formation of clumps on the surface of sterile distilled water. In the treatment of African sleeping sickness, the average single dose for adults is claimed to be 1 Gm. and the total dose from 5 to 10 Gm., 1 Gm. being given at weekly intervals. Some administer 1 Gm. on consecutive or on alternate days for three doses, followed by 1 Gm. weekly for from two to seven additional doses, so that the total dose is from 5 to 10 Gm. Combined treatment with naphuride sodium and tryparsamide has also been recommended, since cases with invasion of the central nervous system, as may occur early in the disease, are favorably influenced by the arsenical.

For the prophylaxis of African sleeping sickness the dose for adults is 1 Gm., for children from 0.3 to 0.75 Gm. and for infants from 0.15 to 0.2 Gm. The same dose is repeated in a week. At the expiration of three months, but not before, a similar prophylactic procedure may be followed.

Tests and Standards.—

Naphuride sodium occurs as a white to slightly pinkish, odorless, almost tasteless powder, which darkens on exposure to light. It is readily soluble in water; insoluble in acetone, benzene and ether. It is incompatible with strong acids or alkalis. The powder does not exhibit an exact melting point. An aqueous solution of naphuride sodium is slightly colored and is neutral to litmus (pH of a 10 per cent solution is about 6.0).

For tests and standards see *J. Am. Med. Assoc.*, 132: 579 (1946).

WINTHROP CHEMICAL CO., INC., NEW YORK

Naphuride Sodium: 1 Gm. ampules.

PENICILLIN IN OIL AND WAX (See *J. Am. Med. Assoc.*, Sept. 7, 1946, p. 23).

The following dosage form has been accepted:

E. R. SQUIBB & SONS, NEW YORK

Penicillin (Calcium) in Oil and Wax: 300,000 units per cubic centimeter, 1-cc. cartridge and 10-cc. vials. Calcium penicillin suspended in peanut oil containing 4.8 per cent (w/v) white wax, U. S. P.

MANNITOL HEXANITRATE (See New and Nonofficial Remedies, 1946, p. 336).

The following dosage form has been accepted:

FLINT, EATON & CO., DECATUR, ILL.

Tablets Mannitol Hexanitate: 32 mg.

PENICILLIN (See New and Nonofficial Remedies, 1946, p. 212).

The following additional dosage form has been accepted:

SCHENLEY LABORATORIES, INC., LAWRENCEBURG, IND.

Penicillin Calcium: 20-cc. vials containing 200,000 units.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1946, p. 191).

The following dosage forms have been accepted:

THE HARROWER LABORATORY, INC., GLENDALE 5, CALIF.

Tablets Sulfathiazole: 0.5 Gm.

THE VALE CHEMICAL CO., INC., ALLENTOWN, PA.

Tablets Sulfathiazole: 0.5 Gm.

ADR

DENTAL REMEDIES RECENTLY ACCEPTED BY
A. D. A. COUNCIL ON DENTAL THERAPEUTICS

Admission to Accepted Dental Remedies means that a product and the methods by which it was marketed at the time of consideration were not found to be in violation of the published rules of the Council on Dental Therapeutics. A summary of the rules appeared in THIS JOURNAL, 7:153 (April), 1946. Accepted products are reconsidered periodically.

DENTIFRICES¹

Hartz Tooth Paste: Composition: Each hundred grams is stated to contain precipitated calcium carbonate (Snow Top Medium), 42.02 Gm.; soap powder, 6.5 Gm.; heavy white mineral oil, 1.18 Gm.; potato starch, 3.5 Gm.; tragacanth powder, 0.25 Gm.; glycerin, 23.08 Gm.; saccharin, 0.25 Gm.; methyl salicylate, 1.5 Gm.; eucalyptol, 0.344 Gm.; oil peppermint, 0.25 Gm.; carmine color, 0.25 Gm.; thymol, 0.028 Gm.; and water, 20.86 Gm.

Manufactured and distributed by the J. F. HARTZ CO., Detroit.

ANESTHETICS—LOCAL²

Procaine HCl 2%, Epinephrine 1:25,000: Each cubic centimeter is stated to contain procaine HCl, 0.02 Gm.; epinephrine, 0.00004 Gm.; sodium bisulfite, 0.0019 Gm.; sodium chloride, 0.0028 Gm.; chlorobutanol, 0.005 Gm.; and distilled water.

Procaine HCl 2%, Epinephrine 1:50,000: Each cubic centimeter is stated to contain procaine HCl, 0.02 Gm.; epinephrine, 0.00002 Gm.; sodium bisulfite, 0.0019 Gm.; sodium chloride, 0.0028 Gm.; chlorobutanol, 0.005 Gm.; and distilled water. Marketed in tubes, 2.25 cc.

Manufactured by ENTISOL LABORATORIES, New York.

Monocaine HCl 1½%, Epinephrine 1:100,000: Each cubic centimeter is stated to contain monocaine hydrochloride, 0.015 Gm.; epinephrine, 0.00001 Gm.; sodium bisulfite, 0.002 Gm.; sodium chloride, 0.0045 Gm.; and distilled water. Marketed in anestubes (1 cc., 1.8 cc., 2.3 cc., 5 cc.), Novampuls (2.5 cc., 5 cc.), ampuls (2 cc., 3 cc., 5 cc.) and bottles (1 ounce, 2 ounces and 4 ounces).

Manufactured by NOVOCOL CHEMICAL MFG CO., INC., Brooklyn, N. Y.

BARBITURATES³

Hexobarbital.—This drug, which is listed in the

¹ Accepted Dental Remedies, Ed., 12, p. 156.

² Accepted Dental Remedies, Ed. 12, p. 48.

³ Accepted Dental Remedies, Ed. 11, p. 66.

British Pharmacopoeia, is N-methyl-cyclohexenyl-methyl-barbituric acid. It is marketed in the United States under the proprietary name of Evipal, as well as the nonproprietary name, hexobarbital.

Properties: Hexobarbital is a white, odorless crystalline powder with a faintly bitter taste. It is soluble in about 3000 parts of water at 20° C., and in alcohol, methyl alcohol, acetone, benzene, chloroform, ether and aqueous solutions of alkali hydroxides, but not in solutions of alkali carbonates.

Actions and Uses: Its action is similar to that of other slightly soluble barbiturates except for the duration of its effect, which is relatively short. It is useful in small doses as a sedative during the day or in larger doses to induce sleep.

Dosage: As a sedative, 0.13 or 0.26 Gm. (2 to 4 gr.); as a hypnotic, 0.26 to 0.39 Gm. (4 to 6 gr.).

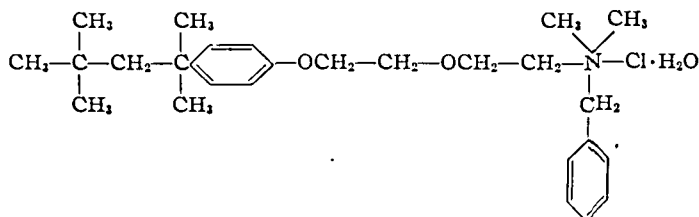
Tests for identity and purity are described in N. N. R. and in the British Pharmacopoeia, 1932, third addendum.

Hexobarbital Tablets: Each tablet contains hexobarbital, 0.26 Gm. (4 gr.) and magnesium oxide, 0.042 Gm.

Distributed by COOK-WAITE LABORATORIES, INC., New York.

AMMONIUM COMPOUNDS¹

Phemerol Chloride [*p*-(2-methyl-4,4-dimethyl pentano-2) (phenoxy-ethoxy-ethyl)] dimethyl benzyl ammonium chloride monohydrate.— $C_{27}H_{42}O_2NCl \cdot H_2O$, m. w. 466.09. Phemerol chloride has the following structural formula:



Properties: Phemerol chloride occurs as colorless, odorless crystals possessing a very bitter taste. By the addition of ether, it may be recrystallized from a chloroform solution in the form of very thin plates, which may assume a hexagonal shape. These crystals possess a high birefringence, parallel extinction and positive elongation, and are biaxial with refractive indexes of 1.580 and 1.560. These crystals and the original material sinter slightly on the hot stage at 120° C., and melt at 164–166° C. The pH of a 1% solution of phemerol chloride is between 4.8 and 5.5. Mineral acids and many salt solutions precipitate phemerol chloride from solution more concentrated than 2% as an oil which crystallizes on drying and has the same properties as phemerol chloride. A solution of phemerol chloride yields a flocculent white precipitate with soap solutions.

Actions and Uses: Phemerol chloride is used in

the form of tincture and aqueous solution as a general purpose antiseptic.

For further tests of identity and purity, see N. N. R.

Manufactured by PARKE, DAVIS & COMPANY, Detroit.

Solution Phemerol Chloride 1:1000 (Aqueous): Phemerol chloride, 0.1% in water containing 1% sodium bicarbonate.

Tincture Phemerol Chloride 1:500: Phemerol chloride, 0.2%, in alcohol, 65%; acetone, 10%; plus water and color.

PERIODON—NOT ACCEPTABLE

Many inquiries received in the office of the Council on Dental Therapeutics prompt a report on Periodon, marketed by the Barnes-Hind Laboratories, San Francisco. The firm's reply to an inquiry from the secretary professed a willingness to cooperate with the Council. However, the firm's promotional activity in the absence of adequate supporting evidence raises several questions.

The name of the product, Periodon, is not acceptable, being in violation of Rule 8.

The composition of Periodon is reported by the firm to be as follows:

Carbonyldiamide peroxide (urea peroxide)	50%
Carbonyldiamide (urea)	27%
Sodium lauryl sulfate	2%
Anhydrous sodium sulfate	21%

The firm calls attention to the danger of explosion in the compounding of the mixture and in its use with other chemicals which might act as catalytic agents. No statement of caution on this point appears on the bottle label or package enclosure.

The product is promoted for both chair-side and home use. A claim for absence of irritation incident to its use is made and then contradicted by a warning to stop its use when signs of irritation develop.

[Following an evaluation of the literature cited by the firm and an unpublished report on four cases treated with Periodon, the original report of the Council concludes that] the claims are inadequately supported and unwarranted. The Council on Dental Therapeutics, in this case as in all instances, will continue to evaluate evidence which may come to its attention.

—*J. Am. Dent. Assoc.*, 33: 1182, 1946

Flene Dental Topical Solution is stated to contain sodium fluoride, 2.0 Gm.; cetylpyridinium chloride, 0.1 Gm.; caesar brown dye, 0.05 Gm.; and water to make 100 cc.

The usefulness of this product in the routine practice of dentistry has not yet been established. Its composition appears to be unduly complex.

¹ Accepted Dental Remedies, Ed. 11, p. 30

A. Ph. A.

Branches

MICHIGAN BRANCH HONORS B. A. BIALK

About 250 members and friends of the Michigan branch attended the first meeting of the season to honor their secretary, Bernard A. Bialk, who is completing a quarter century of service to the A. Ph. A. Beginning his branch work as secretary pro tem, he has been repeatedly reelected as secretary since that time. In appreciation of Ben's continued leadership and conscientious service, a radio-phonograph combination was presented to him by the branch. The presentation was made by J. E. Richardson, chairman of the Bialk Appreciation Committee.

As the principal speaker at the meeting, Dr. Harvey M. Merker, superintendent of manufacturing at Parke-Davis, discussed the "Romance of Medicine," relating trends in pharmacy and medicine from ancient times to the scientific development of the present day.

The program for the branch activities during the coming year was outlined by Ernest R. Jones, chairman of the Program Committee. Before adjourning, President Don Francke asked that the branch pledge a hundred new members to Secretary Bialk as a testimonial.

CHICAGO—"Cooperation in Medical Research" was the title of an address given at the October branch meeting by Dr. Walton Van Winkle, Jr., secretary of the Therapeutic Trials Committee of the American Medical Association. Other regular features of the program included a review of "What's New in Pharmacy" by Charles Lanwermyer and a discussion of "Prescription Problems" by Bvrl Benton.

NORTHWESTERN OHIO—At the October meeting Henry E. Melton, vice-president of McKay Davis Co., spoke on "Analytical and Other Controls in Pharmaceutical Manufacturing." Dr. Oliver F. Senn, who is in charge of research at the McKay Davis Co., gave a general discussion of some of the problems of chemical research. The discussion was supplemented with a demonstration of various pharmaceutical processes including assays by physical and chemical methods.

At an earlier meeting Dr. Charles H. Larwood, Toledo University College of Pharmacy, spoke on "DDT in Insect Control." A paper on "Manufacturing as It Affects Pharmacy" was presented by Richard W. Huopenbecker.

BALTIMORE—Dr. Melvin W. Green of the AMERICAN PHARMACEUTICAL ASSOCIATION Laboratory spoke at the October meeting on "Modern Pharmaceutical Practice: The Use of New Materials in the Dispensing of Drugs for Topical Application." New compounding aids which will appear in the new *National Formulary* were discussed and a demonstration accompanied the lecture. More than 90 pharmacists attended the meeting.

NEW YORK—Discussing "The New York City Health Department Control of Drugs, Devices and Cosmetics" before 150 branch members and friends at the October meeting, Dr. Israel Weinstein, commissioner of The New York City Health Department, pointed out the importance of new controls to regulate the sale of barbiturates.

PHILADELPHIA—A review of streptomycin, including the history, pharmacology, method of assay and indicated therapeutic uses, was presented at the October meeting by Dr. William L. Sampson, assistant director of the Merck Institute for Therapeutic Research. The branch members held a group dinner preceding the session.

WESTERN NEW YORK—About 85 pharmacists attended a joint meeting of the branch and the Western New York Retail Druggists Association in October. Nicholas S. Gesoalde, business manager of the New York State Pharmaceutical Association, described the participating pharmacy plan of the Veterans Administration. The insurance offered by the Blue Cross Hospital Service was discussed by a representative of that organization.

Formation of a professional relations group consisting of representatives of the Western New York Druggists and members of the Erie County Medical Society was announced by Mearl D. Pritchard, president of the branch. This joint committee will meet three or four times a year to discuss mutual problems of the two professions.

A motion picture on departmentization of the modern pharmacy was shown through the courtesy of the Owens Illinois Glass Company.

STUDENT BRANCHES

OHIO STATE—New officers for the student branch are Richard Jack Solve, president; Fred McAfee, president-elect; A. Frances Lohmire, secretary-treasurer; Frances Spellman, editor of the branch Journal; Virginia Butterfield, associate editor; and Yvonne Leatherman, corresponding secretary.

MONTANA STATE UNIVERSITY—Seventy students and three faculty members attended the first meeting of the year of the student branch.



15,564 STUDENTS ENROLLED BY 67 PHARMACY COLLEGES

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The data compiled by the American Association of Colleges of Pharmacy from 67 pharmacy colleges show that undergraduates number 15,133. The remainder are 272 graduate students and 159 special students.

At the undergraduate level 13,382 students are men and 2,182 students are women. Although about 1 out of 6 students is a woman, the percentage varies widely among the classes. About 10.5% of the freshmen are women, whereas 30% of the seniors are women.

Of the 13,382 men in pharmacy colleges, 10,586 are veterans.

The total number enrolled in each of the undergraduate classes for the fall term was as follows: seniors, 1380; juniors, 2121; sophomores, 5182; freshmen, 6450.

ABSORPTION OF INTRAMUSCULARLY INJECTED PENICILLIN STUDIED

Penicillin blood levels of 0.1 unit/ml. can usually be maintained for twenty-four hours or longer following a single intramuscular injection of penicillin suspended in hydrogenated cottonseed oil. In a series of experiments using various oily diluents for penicillin, it was found that peanut oil with 4.8% beeswax, or hydrogenated cottonseed oil (m. p. 40° C.) produced the most satisfactory prolongation of absorption of intramuscularly injected penicillin.

Varying the doses from 300,000 units to 1,000,000 units, a total of 254 injections of penicillin in various oils were given to 36 patients, most of whom were syphilitics. From this preliminary report, it seems probable that a dosage of 1,500,000 units of a very finely ground calcium penicillin of high potency suspended in hydrogenated cottonseed oil (m. p., 40° C.), which can be made fluid under a hot-water tap and dispersed in a disposable syringe, would maintain a penicillin blood level of 0.1 unit/ml. for twenty-four hours or longer in nearly all cases.

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pH	cc. No. 1	cc. No. 2
5	1000	0
6	998.3	1.7
6.2	996.7	3.3
6.75	991.7	8.3
7.2	966.7	33.3
7.6	950	50
7.8	933.3	66.7
8.2	900	100
8.4	866.7	133.3
9.2	733.3	266.7

New A. Ph. A. Members

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Dalton, Jep P., Slocomb
Hillhouse, H. C., Birmingham
Parson, Kathlynn, O., Anniston

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Brody, Jacob S., Los Angeles
Dufrenoy, Jean, San Francisco
Hardy, Jess D., Fullerton
Kinman, Wm. T., Shafter
Lewis, Frank, Tulare
Massi, John J., Los Angeles
Matsuura, Perry S., Vallejo
McFadyen, Dwight S., Long Beach
Prouty, Harry D., Hollywood
Wilson, Kenneth C., San Francisco

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Bone, Jack N., Boulder
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Christensen, Edward C., Castle Rock
Hales, Wayne H., Denver
Israel, Creighton B., Denver
Karuzas, Edward C., Denver
Larson, Carlos G., Denver
March, Anthony, Denver
McGlothing, Paul G., Denver
Patterson, Garland L., Denver
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Rames, Henry B., Denver
Redinger, H. Clyde, Colorado Springs
Tagliente, Emma C., Denver

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Doane, Robert L., Madison
Guba, Frank M., Waterbury
Leeds, Richard, Stamford
Soybel, Abraham, Hamden

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Kowitz, Sidney S., Washington

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Connibear, Robert, Morton
Doubek, Rudolph J., Chicago
Duescher, Herbert O., Waukegan
Feiertag, Lester A., Waukegan
Hall, Donald V., Chicago
Herman, Ben, Chicago
Kirby, Thos. W., Jr., Jerseyville
Levin, Ezra, Champaign
Lizer, Harold P., Peoria
McCall, Philip J., Chicago
Meridian, Charles F., Henry
Myerson, Maurice R., Evanston
Neis, A. D., Amboy
Smith, Charles F., Lacon
Sterling, Robert W., Jr., Dixon
Young, George W., Rock Island

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Dunham, Ira W., Nappanee
Powell, Clarence E., Indianapolis
Reid, Arthur W., Indianapolis
Thomas, J. W., Indianapolis
Zupko, Arthur G., West Lafayette

IOWA

Bohnenkamp, Amos J., Breda
Ireland, Max E., Storm Lake

KANSAS

Addleman, Theodore B., Oberlin
Cook, Gene, Iola
Crow, P. N., Coffeyville
Koontz, Nate P., Topeka
Long, Harry Lee, Arkansas City
Miller, Blaine, Salina
Monahan, Ashley L., Manhattan
Murphy, Dean D., Meade
Potter, Frank E., Anthony
Weber, Leo F., Leavenworth

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Curry, William, Lexington
Karsh, Max Leon, Louisville
Wood, C. Kenneth, Hopkinsville

LOUISIANA

Ballinger, Joseph P., Delhi
Carter, Troy L., Sr., New Orleans
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Chapotel, Edward L., New Orleans
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Fagan, Robert T., New Orleans
Howell, Ruth W., New Orleans
Martinez, Jos. D., New Orleans
Miranti, Gandolfo J., New Orleans
Phillips, Cary L., West Monroe
Richards, H. C., New Orleans
Rivet, Billye, New Orleans
Spatafora, Julius E., Monroe
Sunseri, Joseph B., New Orleans
Thompson, John F., New Orleans
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Shea, Virginia M., Worcester
Spear, Edwin W., Hyde Park

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Cook, Lewis C., Flint
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Herman, Ben, Chicago
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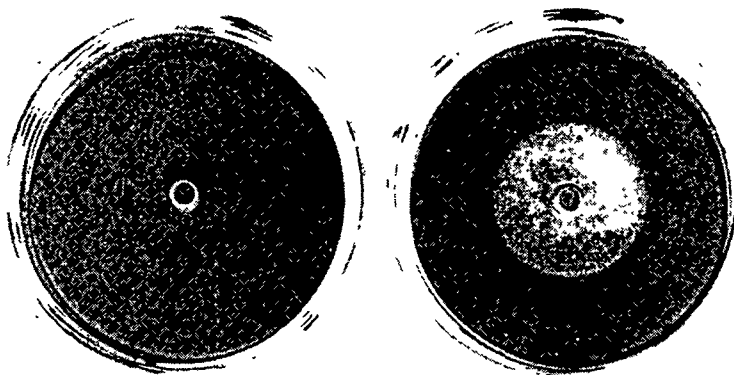
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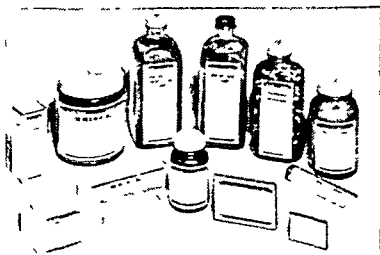
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 Koehler, Frederick W., Blue Earth
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 Glasgow, Ralph, Tupelo
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 Henshaw, Wrennie C., Okolona
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 Johnson, Leslie P., Lexington
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 Rape, Cyrus A., Gulfport
 Red, Basil D., Ellisville
 Senter, T. G., Fulton
 Smith, Gibson S., Carthage
 Smith, Marshall C., Hattiesburg
 Smith, Truman T., Rienzi
 Sparks, Robert L., New Albany
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 Traylor, Roy O., Jackson
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 Waggoner, D. G., Hattiesburg
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 Nachtigall, Mrs. J. M., Tecumseh
 Pace, Donald M., Lincoln
 Sass, Harry L., West Point
 Sister M. Beatrix Eisenmenger, Grand Island

NEVADA

Bollig, Frank M., Las Vegas

NEW HAMPSHIRE

Boyce, Ethel M., Plymouth
 Cate, Lawrence E., Rochester
 Cleary, William, Wilton

NEW JERSEY

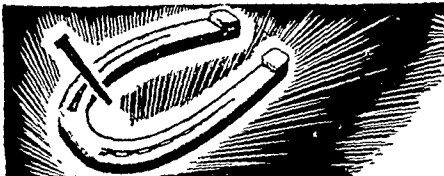
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 Glasser, Abraham, Bayonne
 Golden, Thomas J., Glen Rock
 Goodman, Samuel M., Newark
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 Pilocarpine Salicylate
 Pilocarpine Sulphate
 Podophyllin N.F.
 Quassin
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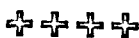
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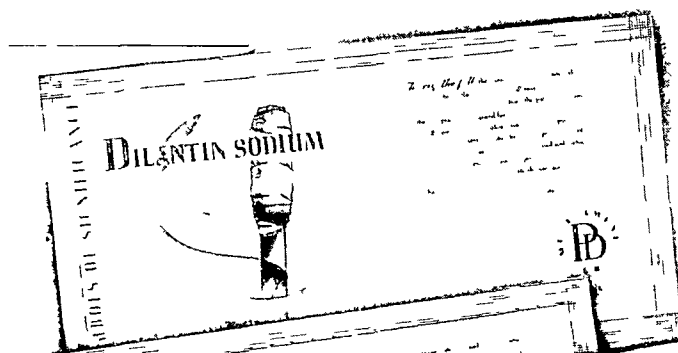
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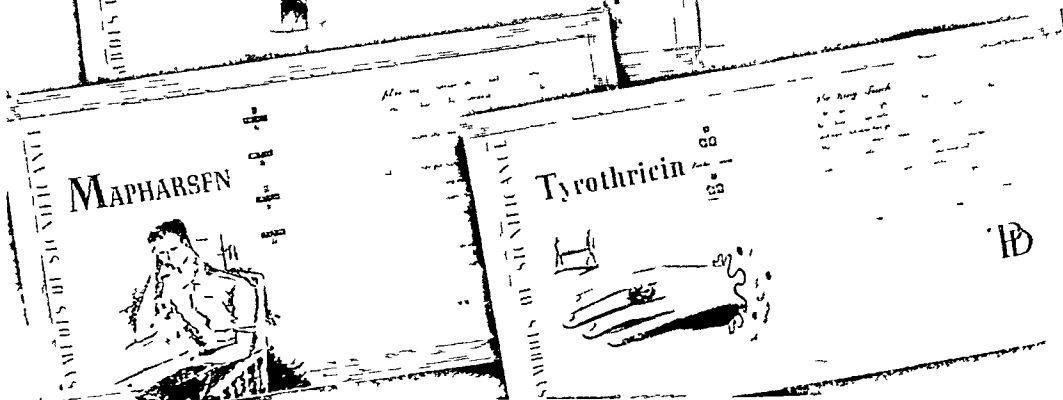
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Page 69; col 1, line 15 (item No. 4, "Sco-
 ville's "), \$4 75 for \$4.

Page 202; title begins, "Liquid Denti-
 frice . . ." line 17, Aqua dest, 100 cc. for
 150 cc

Footnote: *delete* q.s. ad (should read,
 "Methyl salicylate, 100 cc.").

Page 447; line 30, *delete* Apothecary-General

Page 483; col 2, line 37, fourth for third

Page 484; col. 1, line 27, one ten-millionth
 for seven ten-millionths; line 29, 0 0000001
 for 0 0000007

Page 487; col. 1; reverse headings of second
 and third columns, Table II. Heading over
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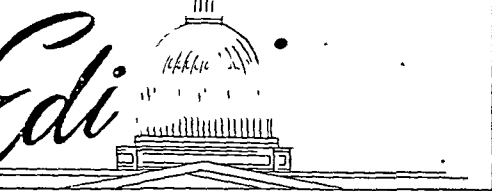
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FRONT COVER: The consistent and sharp upward trend in the growth of the American Pharmaceutical Association is indicated by the illustration. In a decade the total membership has climbed from 3400 to 15,707. Prior to 1943 Association statistics did not segregate active and associate members, as reflected in the chart. At present about two-thirds of the membership is comprised of active members and one-third of associate (student) members. Of the A. Ph. A. active members at least two-thirds are practicing pharmacists. For information on geographic distribution see page 480.



WHAT IS ACCURACY?

THERE should be no complacency about the data on prescription tolerances presented on page 541. For any pharmacist interested in his profession, the time required to digest this material will be well invested.

Progress in developing and applying standards of accuracy with specific reference to prescription technique has lagged behind the development of official drug standards and their application in manufacturing laboratories. As Goldstein implies, and will bring out more clearly in subsequent articles, the two are not necessarily synonymous. The prescription balance and conical graduate will never replace the analytical balance and volumetric apparatus as instruments of accuracy. Nor is the precision of the latter necessary to provide the pharmacist with a just claim to "prescriptions accurately compounded."

What is proper "accuracy" in prescription practice? It has not been shown whether this can be answered satisfactorily in a quantitative way. In Goldstein's opinion present official drug standards and a rule-of-thumb $\pm 10\%$ are not necessarily the final criteria of prescription accuracy.

Until there is a more widely accepted yardstick of prescription tolerances, there will probably continue to be charges and countercharges concerning the number of pharmacists who are not measuring up to the traditional basic concept of the profession: prescription accuracy.

Recent reports on analytic checks of prescription service in several states are fundamentally disturbing. There are apparently either (1) too many variables in compounding to measure the advantages of individualized prescription service against the tolerances used in these studies, or (2) too many pharmacists occasionally or habitually fail to control adequately those factors that determine accuracy: interpretation of the prescription, arithmetic calculations, equipment, ingredients, technique and care in compounding.

Whatever the situation may be, members and delegates at the 1947 A. Ph. A. convention felt that there should be further exploration of the question: What are reasonable prescription tolerances? They passed a resolution asking

the Council to consider the need and necessary procedure for a comprehensive study.

The A. Ph. A. Committee on Prescription Tolerances and others already have done a great deal of spade work in this field. The Council will need to determine whether there should be built upon this foundation a broad-gauge, positive program that will give further guidance to the pharmacist, and law enforcement official.

This would appear to be most productive if a controlled study were made—under some authoritative agency such as the A. Ph. A. laboratory—to show what tolerances are practical for various types of prescriptions when compounded under ordinary conditions of practice, using equipment of a known degree of accuracy.

It also seemed clear from the discussion of prescription tolerances at the A. Ph. A. convention that we have a need for more specific information on variations in accuracy introduced by variations in prescription technique. Without this frame of reference it would be even more difficult to give any definite expression to "reasonable prescription tolerances."

To make such a study meaningful there must also be emphasis on adequate equipment. The literature repeatedly emphasizes inaccurate equipment as a frequent cause of inaccuracy, a factor which the greatest competence never nullifies. There should be an impartial study of the accuracy of available equipment and guidance on the calibration of apparatus and periodic checking of weights and balances.

However, prescription accuracy is also largely a result of the pharmacist's mental attitude. To establish the proper state of mind is a responsibility of our educators and the apprentice's preceptor. To cultivate it, should be a function of pharmacy's organizations and journals.

If a broad program to clarify the problem of prescription tolerances evolves, it will lack meaning in some areas unless there are additional facilities set up at the level of the state government or state association. We have in mind support of an informational program for pharmacists, aid to pharmacists in checking equipment, and a periodic analysis of prescriptions dispensed.

Whenever "reasonable" prescription tolerances are applied, the conscientious pharmacist need have no misgivings about an analytic check on his service. As James Hill of Niagara Falls put it at the A. Ph. A. convention, such a check by the state amounts to free analytic control, a service on which the drug manufacturer spends thousands of dollars to check mass-produced products.

Sirs:

This letter could well be directed to every practicing pharmacist who isn't a member of his state association or the AMERICAN PHARMACEUTICAL ASSOCIATION. . . . These men are willing to go along day in and out and leave to luck the improvement of conditions in pharmacy. The profession has taken terrific strides in the past twenty years toward putting pharmacy in a new suit: a "coat" of prestige and "trousers" of respect in the eyes of the entire nation!

The various association officers, representing pharmacy, fight tenaciously to better conditions while many of the non-members are "in the arms of Morpheus." These non-members are profiting indirectly through the untiring efforts of these few.

Common sense teaches us that "united we stand and divided we fall." This adage applies to the many pharmacists that remain unsigned by their state association and flee from its ranks as though it were a plague! There is nothing to fear, but much to gain. The more that join, the better the future of pharmacy, which is definitely on the upward climb.

Every state association in the country should include with its state member application, blanks with which to join the A. PH. A. There is no reason in the world why all pharmacists shouldn't become members of the nation's mouthpiece of pharmacy, the A. PH. A. It would certainly be foolish to assume that one could build a house without a foundation! The A. PH. A. is that foundation, and the state associations are the houses we build to live in.

The advantages offered by the A. PH. A. to the profession are unlimited. The larger the army of members, the easier the task becomes toward improving conditions in general. The two monthly editions of the JOURNAL, the *Scientific Edition* and the *Practical Pharmacy Edition*, are literally a University of Knowledge and worth many times the price for annual membership. It keeps one abreast with scientific progress, thus enabling us to perform better our duties as pharmacists. It keeps us posted on current legislation affecting our profession.

A glance at the daily itinerary of our present secretary, Dr. Robert P. Fischelis, will give you an idea of what a herculean job he holds. His work is incessant and hard. "For what purpose?" you ask. For your benefit and mine; for the good of the profession. But he must have members to back him up. Let all pharmacists that aren't affiliated with the A. PH. A. resolve today to join! Remember, we do get so much for so little. Our standards

are getting higher and will reach perfection only with a strong professional organization.

Be proud of the fact that you are a pharmacist and one of the nation's "watchdogs of health." Be justly proud that you are a member of the A. PH. A. and doing your share towards upholding the principles for which it stands and fights.

Asbury Park, N. J.

FIORE JOS. VENERI

COMPLIMENTS FROM CANADA

Sirs:

The only criticism of the JOURNAL to date has been that we do not have sufficient copies to meet the demand of the students.

Is it possible for a college such as this in Canada to procure copies in addition to that of the individual membership subscription? The copies of the JOURNAL are in daily use by members of our professional classes. This applies not only to the current issues but to

copies in our files dating back several years in which the students are able to follow the development of thought on such subjects as washable ointment bases and like topics of importance.

Halifax, Can.

JESSIE I. MACKNIGHT

Assorted compliments from various Canadian colleagues have been appreciated. Extra subscriptions of the PRACTICAL PHARMACY EDITION to mailing addresses in Canada are now \$4.35 a year.—THE EDITOR

MUSIC HATH CHARMS

Sirs:

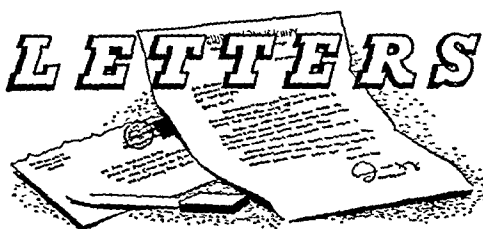
I am a member of the A. PH. A. student branch at Columbia University College of Pharmacy and I enjoy reading the *Practical Pharmacy Edition* very much. Being a music lover and an amateur humorist, I jotted down the following as my impression of the type of prescription we may have to fill in future years if further advances in the therapeutic use of music are made as indicated in the item on this subject in your September issue, page 462. Please note that the prescription is a narcotic:

Tincture of "Sugar Plum Fairies" (Tchaikovsky).....	10. cc.
"The Red Poppy" (Oliere).....	0.1 Gm.
"Love of Three Oranges" (Prokofiev).....	3.0
"Gold and Silver Waltz" (Lehar) ..	5 bars
"The Sea" (Debussy).....	q.s. to make one therapeutically effective concerto.

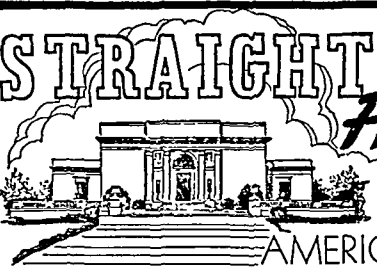
Sig: Play one album three times a day after meals.

New York City

MARVIN L. SILVER



STRAIGHT FROM HEADQUARTERS



by ROBERT P. FISCHER, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

DRUG DISTRIBUTION THROUGH PROFESSIONAL CHANNELS

WITH one conspicuous exception there has been unusual unanimity of opinion and action within the drug industry on matters of common interest during the past year.

The conspicuous exception is the continued aggressive opposition of the Proprietary Association to efforts to safeguard the distribution of drugs by limiting such distribution to pharmacies.

The Proprietary Association is a member of the National Drug Trade Conference. It is to be presumed that all members of that Conference are interested in the public health. It is presumed that they know that the governments of the various states have created a class of licensees to deal in drugs, medicines and poisons and to compound prescriptions. This class of individuals has been created because the public knows that drugs and medicines are not mere merchandise to be distributed in the same manner as candy, groceries and dry goods.

It continues to be a source of great surprise to all others engaged in the practice of pharmacy that this one group goes to great lengths on the one hand to impress the public with the scientific nature of its products and on the other hand encourages and even urges the distribution of such products through non-professional outlets.

It is always unfortunate when the internal problems of any profession or industry are aired in public, because the general public does not understand the details of such controversies. Under such circumstances members of state legislatures (which, under the police powers granted the states, regulate the practice of pharmacy) may obtain the impression that there is a division in the profession of pharmacy. This is not the case. However, when members of the profession appear before committees of the legislature to request restrictive legislation in the interest of the public health, these committees are visited at the same time by representatives of the Proprietary Association. The latter also make claims about being interested in the public health

but plead for legislation giving the privileges of drug distribution to wagon peddlers, general storekeepers and other non-professional retail outlets. The members of the legislature are naturally confused.

This kind of activity is properly resented by members of the profession of pharmacy and, as a result of a recent incident in the state of Georgia, a resolution was presented to the AMERICAN PHARMACEUTICAL ASSOCIATION at its Milwaukee convention last August which read as follows:

"WHEREAS the various state pharmaceutical associations, in their attempt to strengthen and perfect laws regulating the control and sale of dangerous drugs, have found to their dismay that representatives of the Proprietary Association have taken steps to prevent passage of these laws, or to weaken them by amendments, be it therefore

"Resolved that the A. PH. A. condemn such practice on the part of the Proprietary Association, and respectfully urge that in the future the Proprietary Association register its protest, if any, with the constituted officials of the state boards or associations."

The Committee on Resolutions expressed sympathy with the purpose of this resolution and recommended that it be transmitted to the Council for action. The House of Delegates and the Association concurred in the recommendation of the Committee.

The members of the Georgia State Pharmaceutical Association who were active in the presentation of this resolution include a past president of the AMERICAN PHARMACEUTICAL ASSOCIATION and the dean of a college of pharmacy. Certainly these men command respect and are not apt to consider it necessary to introduce a resolution of this kind if they had not met with an unusual form of opposition to the presentation of legislation which they considered in the interest of public health.

However, the A. Ph. A. Committee on Resolutions which considered this matter reported to the House of Delegates that it was in sympathy with the purpose of the resolution but recommended that it be transmitted to the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION for action. Before the Council could act on the matter, the Proprietary Association issued a public statement based upon a report that the resolution submitted by the Georgia Pharmaceutical Association had been adopted.

The Proprietary Association, like several other national pharmaceutical associations, is represented in the House of Delegates by an accredited delegate. This delegate had every opportunity to learn of the disposition of the resolution in question and he could have spoken in opposition to the resolution, had he desired to do so. The floor of the House of Delegates is open to any delegate and, furthermore, members of the AMERICAN PHARMACEUTICAL ASSOCIATION who are not accredited delegates may also speak in the House of Delegates, although they have no vote in the House.

Therefore, there was every opportunity for this matter to be thoroughly discussed in the House of Delegates. No such discussion took place, because the representative of the Proprietary Association did not choose to speak on the subject.

The point we wish to make is that there is a forum in American pharmacy for the discussion of these matters and it should be taken advantage of by those who are sincere in their efforts to promote the public health and welfare and the profession of pharmacy.

In place of discussing the matter within the profession the Proprietary Association chose to issue a public statement on September 10, in which it pointed out that it has never interfered with and has in fact assisted in the passage of laws regulating traffic in dangerous drugs and narcotics.

The statement went on to say that the Proprietary Association's representatives have always been willing to cooperate with state boards and associations in the drafting of legislation pertaining to the regulation of the practice of pharmacy.

This was followed by a complaint that state boards or associations rarely, if ever, contact drug industry representatives prior to the introduction of legislation amending the pharmacy laws.

The statement continued as follows:

"If and when the state boards or associations honestly desire to bring up to date the laws

regulating the practice of pharmacy, the cooperation and assistance of the Proprietary Association will be forthcoming. However, if such proposals cover the field of merchandising and attempts are made to restrict the sale of proprietary products which meet with the requirements of the Federal Food and Drug Act and which are offered for sale to the general public, there must of necessity be a parting of the ways. There can be no retrogression in the proprietary articles industry, only progression in pace with the art and science of medicine."

It will be noted that in this statement the honesty of state boards and associations in bringing laws regulating the practice of pharmacy up to date is questioned. It would be of interest to the profession of pharmacy to learn from the Proprietary Association how the promiscuous sale of drugs and medicines through unregulated channels can be considered a part of the progress in the art and science of medicine.

We believe that Mr. Leslie D. Harrop, attorney for the American Drug Manufacturers' Association, gave the answer to all of this in his splendid address before the AMERICAN PHARMACEUTICAL ASSOCIATION at the Milwaukee convention. Mr. Harrop pointed out that the kind of activity to which the Georgia State Pharmaceutical Association, among others, objected is the effort to build up a general exemption from exclusive distribution in the drugstore of an ever-increasing number of drug products. "Carried to its quite logical conclusion," said Mr. Harrop, "the effects of these activities, if successful, will within a short time leave the pharmacist with the dubious distinction of being able to say he is the only person who can fill prescriptions. And he will also realize that without a day of training in pharmacy John Jones who had the minimum amount of common schooling can sell in the corner grocery store about 95% of the medicines used by the public."

Mr. Harrop also points out that in support of this type of activity, advantage is being taken of the Federal Food, Drug and Cosmetic Act by claiming that this act was passed to extend or promote self-medication. The entire legislative record in connection with this Act shows that it was aimed at making self-medication, when undertaken, a safer method of treating disease by giving to the layman who chooses to be his own doctor, better information concerning the properties of the drug he proposes to use.

From such intent, however, the interpretations have veered sharply. Instead of a law to assure

(Continued, page 582)

A NEW MORPHINE-LIKE ANALGESIC

by NATHAN B. EDDY

SECRETARY, COMMITTEE ON DRUG ADDICTION AND NARCOTICS, NATIONAL RESEARCH COUNCIL

POWERFUL SYNTHETIC DRUG—VARIOUSLY KNOWN AS AMIDONE, METHADON, DOLOPHINE, ADANON, 10820 AND AN-148—IS NOW AVAILABLE AS USEFUL SUBSTITUTE FOR MORPHINE IN MOST TYPES OF PAIN . . . LESS SEDATION AND LITTLE RESPIRATORY OR CIRCULATORY EFFECTS OBSERVED IN CLINICAL TRIALS; ADDICTION LIABILITY PLACES IT UNDER NARCOTIC CONTROL

AT THE close of the war in Europe the Foreign Economic Administration of the State Department organized teams to investigate German chemical industry. The report of one of these* included information on progress the Germans were making in the field of analgesics.

In the 1930's the Germans were looking for an antispasmodic as a substitute for atropine and developed a compound which they called Dolantin. Quite incidentally they discovered that this was a better analgesic than antispasmodic and they introduced it to medicine as such in 1939. Subsequently Dolantin (known in this country as Demerol) was shown to possess many morphine-like properties including those of tolerance and addiction liability, but its analgesic potency was more nearly like codeine than morphine.

The Germans made many Demerol derivatives, but apparently none showed more than minor improvement. At the same time they were developing a series of diphenyl derivatives and some of these showed remarkable activity. The outstanding example of the series, as outlined in the Kleiderer report, the Germans called "10820" or "Amidon." Accounts of this substance have appeared in American literature under these designations and as "Dolophine" and "AN-148." Methadon is the name recommended for it by the Council on Pharmacy and Chemistry of the American Medical Association. Amidone is the name which will be used in this report because it has been most commonly employed in the investigative work to which reference will be made.

It should be emphasized, however, that all of the names mentioned refer to the same chemical entity. Amidone then is 6-dimethylamino-4,4-diphenyl-3-heptanone.† Chemically it is not at all related to morphine nor directly to Demerol. It is somewhat related to a diphenyl ethanolamine which has been described as mildly analgesic, but which is not at all morphine-like. (The structural formulas for these compounds are shown on the facing page.)

The hydrochloride of Amidone is a white crystalline substance, soluble in water to about 5%, of bitter taste, and somewhat irritating when injected subcutaneously. Amidone is a racemate and has been resolved into its levo- and dextrorotatory isomers.

The racemate and the isomers have about the same toxicity in laboratory animals, but the analgesic effect and other morphine-like properties are exhibited chiefly by the *l*-form. In animals Amidone is three to ten times more toxic than morphine, according to the species, and two to three times more toxic than Demerol, but its analgesic effect is twice that of morphine and 10 times greater than that of Demerol so that it still has a very wide margin of safety.

Amidone has been administered to all of the common laboratory animals (both intact and in some instances animals with various parts of the nervous system destroyed) and to man (normal individuals, patients needing sedation or relief of pain, and known morphine addicts). In almost every instance and condition the effect of Amidone is qualitatively the same as that of morphine.²⁻¹¹ It produces such typical morphine effects as the Straub reaction in mice (which has been used as a biological test for the

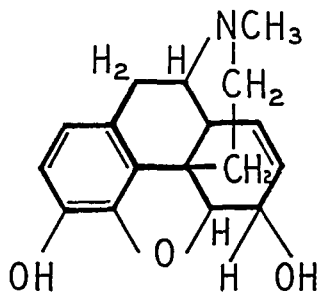
* The team for medicinal and pharmaceutical chemistry was headed by Dr. Kleiderer of the Eli Lilly organization. Its report was prepared for publication by the Department of Commerce in the Fall of 1945.¹

† Some reports have erroneously given the chemical name of Amidone as 1,1-diphenyl-1-(dimethylaminoisopropyl)-butanone-2, on account of an initial misunderstanding.

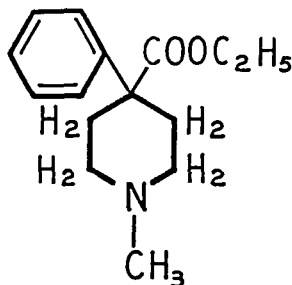
presence of morphine), purposeless excitement in cats and euphoria (with large doses) in man. Its effect on behavior and reflex activity in decorticate, decerebrate and spinal dogs and cats duplicates that of morphine. It has an effect similar to that of morphine on circulation and respiration and on smooth muscle, at least of the intestine. Tolerance to Amidone can be developed in animals (except perhaps the monkey) and in man as with morphine though somewhat

tory depression or significant circulatory change.

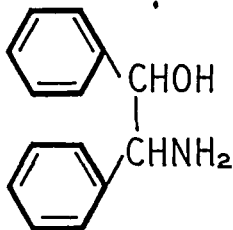
The principal side effects have been dizziness, nausea and vomiting. These untoward reactions seem to vary more with the activity of the patient than with the mode of administration. For example, in a group of cancer patients, who were mostly bedridden, to whom Amidone was given parenterally for pain relief, side reactions appeared in less than 5%. On the other hand, in a group of normal individuals who were com-



MORPHINE

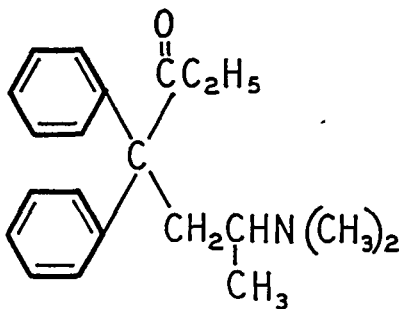


DEMEROL



B-HYDROXY- α , β -DIPHENYL

ETHYLAMINE



AMIDONE

more slowly. The drug has definite addiction liability.

Thousands of doses of Amidone have now been given to patients in this country with all types of clinical conditions.¹²⁻¹⁶ Administration has been oral and parenteral (subcutaneous, intramuscular and intravenous) and the indications for its use have been as varied as for morphine. This clinical experience has shown that Amidone is an effective analgesic for man; as a rule, the dose required for adequate pain relief is about two-thirds the dose of morphine under the same conditions. Single analgesic doses produce less sedation than morphine and usually no respira-

pelled to be ambulatory during observation, to whom Amidone was also given parenterally, nausea and vomiting occurred in almost 50%. After oral doses of Amidone, where the patients were usually ambulatory, side reactions have been reported in 25 to 50% of trials. This relation of side effects to ambulation is usually a disadvantage; it can be an advantage in certain cases where bed-rest is desirable, compelling such rest to avoid the undesirable effects. The relatively slight sedative effect of analgesic doses also can be an advantage or disadvantage—a disadvantage particularly in pre-anesthetic medication and in other cases where anxiety is a symp-

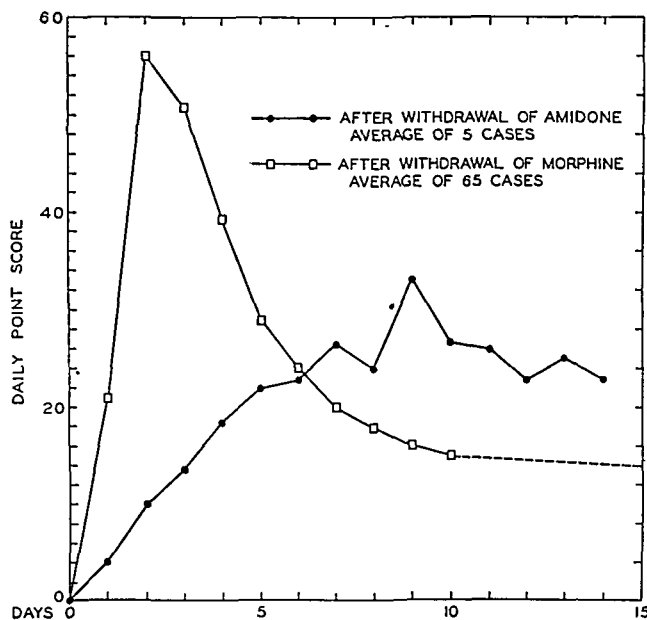


FIGURE 1—Intensity of abstinence symptoms after administration of Amidone for four and one-half to six months. In Figs. 1 and 2 abstinence intensity is plotted according to the method of Kolb and Himmelsbach.²²

tom that the physician desires to alleviate.

Though single analgesic doses produce little or no effect on respiration the principal danger of overdosage will be respiratory failure as in morphine poisoning. Less profound depression (coma) may follow Amidone overdosage than with morphine but the treatment should be the same; namely, directed toward keeping the patient awake and application of respiratory stimulants or artificial respiration. As in morphine poisoning one should also watch closely the circulation because both drugs act similarly in this respect.

Experiments to determine the effect of prolonged administration of Amidone have been carried out on mice and rats, dogs, monkeys and man. In addition there is accumulating information on prolonged administration under clinical conditions. Mice and rats develop tolerance to the analgesic effect of Amidone about as with morphine both in speed and degree. Dogs, intact, decorticate, decerebrate and spinal animals, develop tolerance to various effects of Amidone as rapidly as with morphine if multiple doses per day are given. In addition all of these dogs develop dependence upon Amidone (addiction) more rapidly and more intensely than with morphine, so that when the drug is stopped after a month or more of administration a definite and intense abstinence picture appears within a few hours.¹⁷ According to Woods, Wyngaarden and Seevers,¹⁸ monkeys, given small doses of Amidone subcutaneously once

daily, developed neither tolerance nor dependence.

Isbell and his co-workers^{19,20} have administered Amidone to former morphine addicts, who volunteered for the experiment. The drug was given four times daily subcutaneously for periods up to six months and in increasing amount up to 100 to 200 mg. per dose. During the first day or two the sedative effect of the drug increases slightly and then tolerance begins to appear so that the individuals are almost completely tolerant to the effects of the large doses given at the end of six months. They are tolerant not only to the sedative but also to the analgesic and other effects of Amidone, but the tolerance development is slower than with morphine under similar circumstances. These former morphine addicts show a distinct euphoric reaction to Amidone which they describe as entirely comparable to that of morphine, heroin and related substances. The dose required to produce this euphoric reaction, however, is larger than the minimal analgesic dose of clinical practice.

When Amidone is stopped abruptly after six months' administration to the post-addict group a definite abstinence picture appears (*see fig. 1*). This develops more slowly and is less intense than after morphine but is definite and quite characteristic. It can only be interpreted as indicative of physical dependence in these individuals as with morphine.

In clinical practice Amidone has been administered for relief of pain in many individuals, who have not previously received much morphine, for periods of one to six months. Among these cases there has been so far little evidence of tolerance to the analgesic effect of the drug and signs of physical dependence (addiction) have been observed only once.²¹

Turning again to the administration of Amidone in relation to morphine addiction, it has been demonstrated²⁰ that it will substitute for morphine smoothly and completely in a known

addiction, preventing entirely the abstinence phenomena which would otherwise develop when morphine is withdrawn. Later, after days or weeks of Amidone substitution, the drug can be stopped abruptly and there will develop a less intense abstinence picture than is usually seen on abrupt withdrawal of morphine (*see fig. 2*). This may mean a useful role for Amidone in the treatment of morphine addiction, permitting a smooth substitution for morphine and a less stormy withdrawal period than by any of the methods of treatment now in use.

To sum up, Amidone is a powerful analgesic for most types of pain which also exhibits most of the other effects of morphine. In ambulatory patients its use will be attended by unpleasant side reactions—dizziness, nausea and vomiting—

about as often as with morphine. Overdosage will cause respiratory depression and prolonged administration probably constipation. Tolerance to it can be developed as with morphine. A euphoric reaction may be observed, especially if doses larger than necessary to control pain are given. It must be considered to have definite addiction liability. Finally, because of its morphine-like characteristics it is practically certain that so far as it is available Amidone will be abused by those individuals who seek relief in drugs for their inadequate adjustment. This abuse will certainly lead to habituation and probably to physical dependence. It is vital, therefore, to apply the same control and restrictions in respect to both manufacture and handling of Amidone as are applied to morphine. And

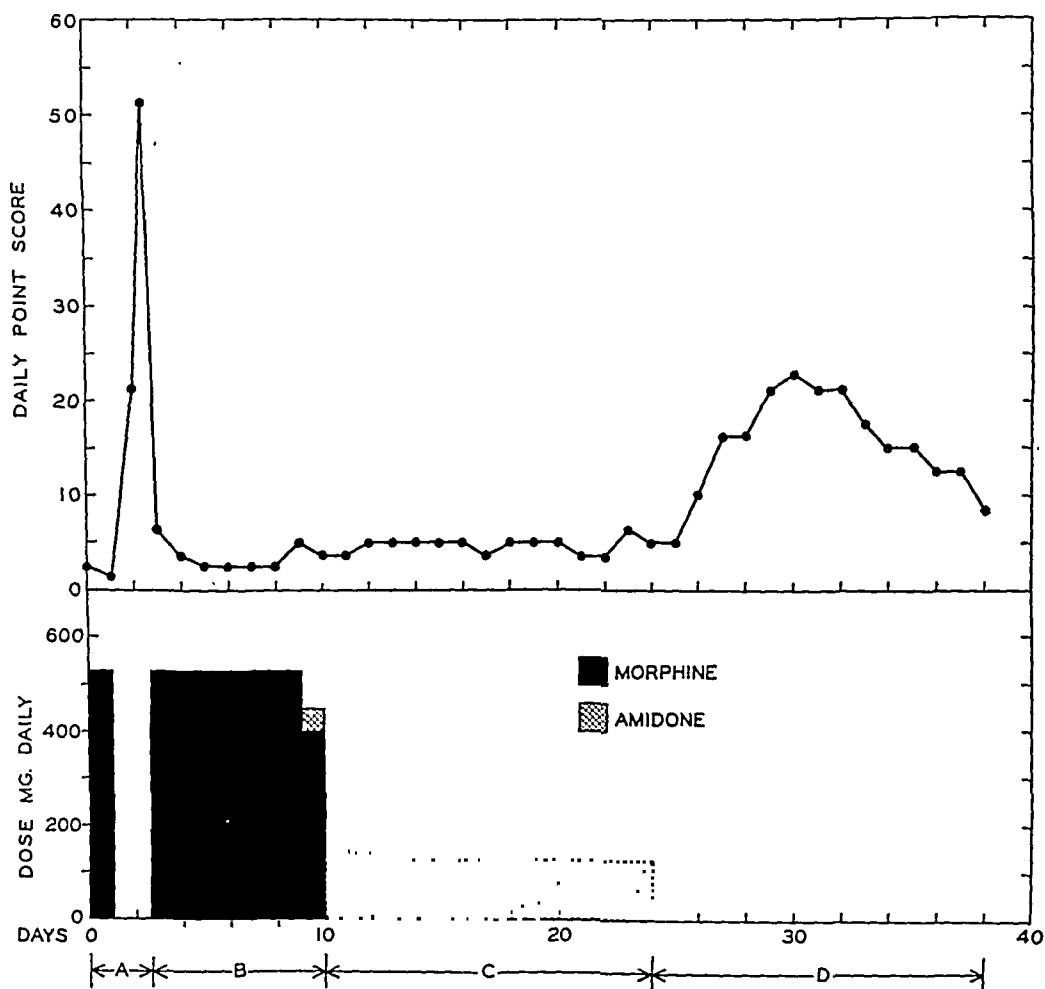


FIGURE 2—Abstinence picture upon substitution of Amidone for morphine. Average of 12 cases. (A) Preliminary withdrawal of morphine; (B) Restabilization on morphine; (C) Substitution of Amidone; (D) Withdrawal of Amidone.

the physician should employ the same precautions in its use as he would with morphine and related substances.

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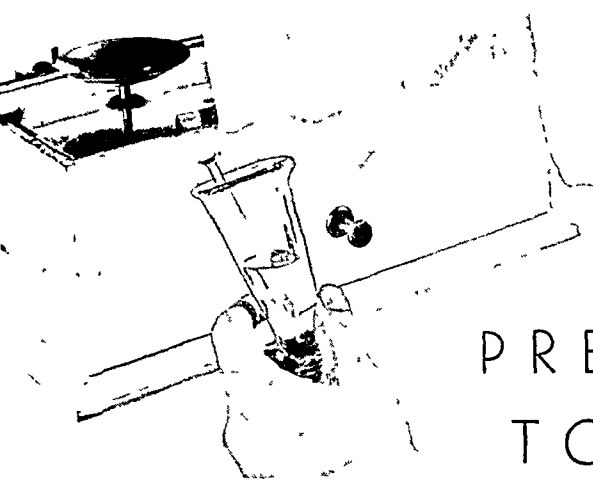
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A. PH. A. MEMBERSHIP REACHES NEW ALL-TIME HIGH

THE front cover of this issue portrays graphically the continued upward trend in the membership of the AMERICAN PHARMACEUTICAL ASSOCIATION as the 1946-47 ASSOCIATION year came to a close. At the time of the Milwaukee convention there were 15,707 members, consisting of 10,264 active members, 5426 associate (student) members and 17 honorary members. Among the active members are 342 life members. A decade ago the total A. Ph. A. membership was 3400.

At the end of the 1946-47 ASSOCIATION year the active membership was distributed geographically as follows:

Alabama.....	93	Maryland.....	226	Rhode Island.....	34
Arizona.....	28	Massachusetts.....	385	S. Carolina.....	61
Arkansas.....	44	Michigan.....	549	S. Dakota.....	63
California.....	715	Minnesota.....	178	Tennessee.....	94
Colorado.....	106	Mississippi.....	109	Texas.....	163
Connecticut.....	130	Missouri.....	194	Utah.....	33
Delaware.....	13	Montana.....	39	Vermont.....	7
Distr. of Colum.....	124	Nebraska.....	102	Virginia.....	160
Florida.....	99	Nevada.....	5	Washington.....	125
Georgia.....	122	New Hampshire....	65	W. Virginia.....	68
Idaho.....	18	New Jersey.....	755	Wisconsin.....	586
Illinois.....	578	New Mexico.....	49	Wyoming.....	12
Indiana.....	265	New York.....	1090	Alaska.....	3
Iowa.....	123	N. Carolina.....	107	Canal Zone.....	9
Kansas.....	91	N. Dakota.....	29	Hawaii.....	20
Kentucky.....	76	Ohio.....	695	Puerto Rico.....	108
Louisiana.....	125	Oklahoma.....	48	Canada.....	86
Maine.....	59	Oregon.....	170	Other Foreign.....	174
		Pennsylvania.....	854		



FACTORS AFFECTING ACCURACY IN COMPOUNDING, THE FIRST IN A SERIES ON Rx STANDARDS

by SAMUEL W. GOLDSTEIN*

PRESCRIPTION TOLERANCES

EARLIER attempts to determine the kind and extent of errors in prescription compounding have been published, but no satisfactory explanation or corrective recommendations have been offered.¹

Andrews¹⁻⁵ published a series of articles dealing with this subject. All the compounding and at least some of the checking of the prescriptions used in his study were the work of undergraduate pharmacy students. This nullifies to a large extent what might have been a major contribution toward clarifying this problem.

A bulletin⁶ on prescription tolerances published by the ASSOCIATION in 1933 criticized the actions of some drug control officials as presenting to the public an incorrect picture of pharmaceutical activity. It pointed out that slight variations in quantities of prescription ingredients are due to various factors, many of them beyond the control of the compounder, and when these factors are not given proper consideration by law-enforcement bodies injustices may follow. A committee had been appointed in 1932 to make a study of what constitutes reasonable deviations in prescription ingredients and to establish reasonable tolerances. The first results of the efforts of this committee dealt with powders and capsules and were published in 1934.⁷

The Committee studied 600 prescriptions for powders containing two parts of charcoal and one part of heavy magnesium oxide. They eliminated all the preparations whose total weight varied by more than 10% from the prescribed total weight. Over 90% of the 125 discarded products had been prepared by students or Board candidates. This emphasizes the fallacy in using students in surveys of this type. The percentage of the remaining 450 prescriptions that were

compounded by students is not mentioned. Weights of the individual powders in each set of ten gave the following results: About 18% of the preparations failed to fall within a $\pm 20\%$ variation; and about 51% failed to fall within a $\pm 10\%$ variation. Then, apparently, they based their conclusions on the fact that a group of students, who were told their work would be checked, put up powders reported within a $\pm 10\%$ variation.

One of the four factors to which the Committee attributed the great variation in total weight in the discarded preparations was faulty weights or balances. When it is noted that over 90% of these prescriptions were filled by students and Board candidates, inclusion of this factor is a direct indictment of the condition of the weights and balances in the college of pharmacy where the work was done. Which school participated I do not know. If such a condition exists in the schools, how can we expect to turn out pharmacists who properly recognize the importance of correct weights and balances?

A survey conducted by L. M. Kantner in 1941 in the drugstores of Maryland revealed that many faulty balances and incorrect weights were being used. About fifty prescription balances and at least a thousand weights were condemned.

For the past several years the reports of the A. PH. A. Committee on Prescription Tolerances have dealt mainly with the problem of improving the equipment used in filling prescriptions. The 1944 report of the Committee states that the real answer to this part of the problem is a minimum equipment law such as was first passed in Maryland.

The "eye" method of dividing powders, which the Committee reported as satisfactory, introduces the personal factor. Everyone does not have the same ability to judge amounts of powders visually. The same individual will not judge in exactly the same manner at all times. Physi-

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The author thanks W. F. Reindollar, chief of the Bureau of Chemistry, for the use of his Annual Reports and the Bureau files

cal well-being in general and optical condition in particular will play a part. Whether the prescription is filled in the late part of the day when fatigue sets in is important. Certainly, whether the prescription is filled leisurely or hurriedly will affect the accuracy of divisions.

The non-toxic nature of ingredients in powders such as the one used in the Committee's study might also tend to cause laxness on the part of the pharmacist. It should follow that with more toxic ingredients greater precision could be expected.

The Committee's 1934 report also gave the results of a study of prescriptions for 5-grain and 3-grain capsules of the same mixture used in the powders. In the first group the gross weights varied from 5.6% to 15.8% below the theoretical weight, with variations from +12.4% to -37% in the individual capsule contents. In the 3-grain sets the gross weights showed variations of -7.3% to -22.7% from the theoretical, and individual capsule content variations of +7.7% to -37%. Neither the compounders nor the manner in which the preparations were checked were described.

The Committee found that variations among empty capsules No. 0, 1, and 4 were $\pm 11.9\%$, $\pm 9.2\%$, and $\pm 8.1\%$, respectively. Since most pharmacists use an empty capsule as a tare when they do weigh a filled capsule, it is obvious that a large error is introduced in this manner.

A further program of study was outlined in the 1934 Committee report but no later reports were made on the suggested studies. It is possible that the data obtained in the preliminary study of capsule-filling accuracy frightened them away from further investigation. Public health workers have recently made surveys of compounding accuracy under actual drugstore conditions and have published their findings.^{8, 9} Their revelations in no way give aid to those who insist that prescription compounding should be considered an exact science. The present study is an attempt to clarify the problem of compounding inaccuracies and to determine what corrective steps can be recommended.

All the prescriptions and other extemporaneous preparations used in this study, and not otherwise credited, were compounded by licensed pharmacists in the drugstores of Maryland. The preparations were purchased by drug and food inspectors of the Maryland Department of Health, especially by H. Bernhardt, under the direction of L. M. Kantner, deputy drug commissioner. The samples were sealed and delivered to the Bureau of Chemistry where they were tested and analyzed by the author.

Capsules

We have tested five prescriptions for capsules containing strychnine sulfate 0.6 gr., arsenous acid 0.6 or 0.8 gr., and reduced iron 30 gr. to be distributed among 20 capsules. All the compounders added milk sugar to the mixture. From the weights of the contents of the individual capsules the following values for the average deviation and the maximum deviation, respectively, from the average weight were obtained for the different prescriptions; $\pm 7.6\%$ and $\pm 21.0\%$; $\pm 5.2\%$ and $\pm 14.3\%$; $\pm 2.1\%$ and $\pm 6.0\%$; $\pm 1.1\%$ and $\pm 3.3\%$; $\pm 3.2\%$ and $\pm 7.2\%$. The results of the chemical analyses for the ingredients of these prescriptions are given in the same order as above in Table I.

The percentage variation from the theoretical total amount of each ingredient is shown. Note that sample No. 42-21, which showed the widest variations in the net weights of the individual capsules, was found to contain, in the bulk powder, the amounts of the ingredients most closely approximating the theoretical quantities. Also note that the worst offender with regard to tested ingredients (No. 44-1330) packed his capsules with a maximum variation of only $\pm 7.2\%$.

A prescription for codeine sulfate 3 gr., caffeine citrate $1\frac{1}{2}$ gr., aspirin 30 gr., nux vomica extract 1 gr., and belladonna extract 1 gr., to be distributed among 8 capsules, was filled and tested. The total weight found was 33.8 gr. which was 9.3% less than the theoretical weight of 36.5 gr. The average deviation from the theoretical weight per capsule was $\pm 7.2\%$ with none overweight. The greatest deviation was -12.3%. Analysis for codeine sulfate showed 2.8 gr. present or an error of -6.7%.

Another prescription called for phenacetin $\frac{1}{2}$ dram, aspirin $\frac{1}{2}$ dram, and codeine sulfate 4 gr., to

TABLE I—PERCENTAGE VARIATION IN CAPSULE INGREDIENTS

Sample No.:	42-21	42-24	42-25	43-360	44-1330
	%	%	%	%	%
INGREDIENT	VARIATION	VARIATION	VARIATION	VARIATION	VARIATION
Arsenous acid	-5.0	-17.5	-8.3	-26.3	Absent
Strychnine sulfate	-3.3	-25.0	-15.0	-20.0	Absent
Reduced iron	-0.3	+10.0	-12.7	-23.7	+71.3

make 12 capsules. The total weight found was 60.3 gr., which was 9.4% less than the theoretical weight of 64 gr. The average deviation from the theoretical weight per capsule was $\pm 5.7\%$ with none overweight. The greatest deviation was -8.8% . Analysis showed the following variations: codeine sulfate -7.6% ; phenacetin -13.3% ; aspirin -10.7% .

Another prescription calling for codeine phosphate, caffeine citrate, aspirin, and phenacetin showed wide variations in all respects except in deviation from the average mean weight per capsule. Apparently a commercially packed capsule had been substituted.

Stewart⁹ reported results of analyses of nine prescriptions for phenacetin 18 gr. and aspirin enough to make 60 gr., the mixture to be distributed among 12 capsules. Weights of individual capsules showed that four of the nine sets of capsules came within a tolerance of $\pm 10\%$ of the average weight. The worst showed a maximum deviation of 33.7% from the average weight. Four of the nine samples came within a tolerance of $\pm 10\%$ for phenacetin content; the others varying from 77.3% to 114.0% of the amount prescribed. Two samples came within a tolerance of $\pm 10\%$ for aspirin; the others varying from 74.2% to 158.7% of the amount prescribed. One pharmacist supplied a pre-packed capsule containing caffeine in addition to the two prescribed compounds. Stewart states that eight samples of capsules containing a mixture of caffeine citrate, acetanilid, and sodium bicarbonate, and twelve samples of capsules containing calomel and sodium bicarbonate were tested with results essentially the same as those obtained with the prescriptions for capsules discussed above.

Since the general practice is to weigh the packed capsule against an empty capsule as a tare, a degree of accuracy approaching the limits feasible in other forms of medication, e.g., tablets, are practically unobtainable for unit dosage by this procedure. This should not influence the preparation of the bulk powder to be distributed among the capsules. Analytical results based on the combined contents of the capsules supplied on prescriptions indicate that even here the variations often exceed a tolerance of $\pm 10\%$.

Powders

The following prescription was tested: Anesthine 2 gr.; sod. phenobarb. $\frac{1}{4}$ gr.; acetylsalicylic ac. and acetophenetidin 5 gr. of each per powder. Twelve powders. The total weight exceeded the prescribed weight by 16.7% . Seven of the twelve powders fell within a $\pm 10\%$ variation from the theoretical weight. Of the remaining five powders, the lowest weight was 27.6% below and the highest weight was 25.2% above the theoretical weight. The average deviation was $\pm 12.6\%$.

The following prescription was tested: Solid ext. belladonna 2 gr.; sod. bicarb. and mag. oxide, of each 1 dr., to make 12 powders. The total weight varied from the prescribed weight by -15.7% . Ten of the twelve powders did not fall within a $\pm 10\%$ variation from the theoretical, the only high value being 10.3% above and the lowest value being 35.5% below the theoretical weight. The average deviation was $\pm 17.4\%$.

Another prescription, similar to the preceding one except that 3, instead of 2, gr. of belladonna ext. were requested, was tested with the following results. The total weight varied from the prescribed weight by only $+0.6\%$. All the powders fell within a $\pm 10\%$ variation from the theoretical. The average deviation was $\pm 5.7\%$.

Stewart⁹ analyzed four samples of prescriptions containing powdered sulfadiazine 40 gr. and enough lactose to make a total weight of 60 gr. of the mixture to be mixed and divided into 20 powders. The worst sample showed an average deviation of $\pm 12.5\%$ from the average weight and a maximum deviation of 34.7% ; while the best showed an average deviation of $\pm 7.3\%$ from the average weight and a maximum deviation of 17.8% . The sulfadiazine content in the four samples varied from 92.5% to 103.0% of the amount prescribed.

Present Procedure Inadequate

After a careful consideration of the problems involved in dispensing powders, only one conclusion can be reached. If the dispensing of powders is to be placed on a scientific level the following type of procedure must be followed:

1. Equipment must meet required standards.
2. Sufficient quantities of ingredients to make at least one powder more than the number prescribed should be weighed and thoroughly mixed.
3. A sufficient quantity of the mixture to meet the requirement for each individual powder should be weighed and transferred to the powder paper, or the paper could be tared and the powder weighed on it.

Unless this type of procedure is followed it is a waste of time to talk about setting a precise limit of tolerance in the filling of prescriptions for powders. For it is after the factors removed by this procedure are eliminated that the errors caused by carelessness and poor technique are comparable with those responsible for errors in filling prescriptions calling for liquid preparations. The same reasoning holds for the filling of prescriptions for capsules with the exception that each empty capsule must be tared before filling with the required weight of the prescribed ingredients.

It may be a waste of time to talk about getting all pharmacists to use a procedure like the one

indicated. Many pharmacists undoubtedly can do fairly accurate work using the generally accepted procedures. But there can be no doubt that many others cannot do so. As long as the present procedures are used, the extent of variations from the exact values in powder and capsule preparations prepared in the drugstore are going to be large, especially with regard to variations among the individual portions of the products.

Liquid Preparations

Variations in compounding liquid preparations can be attributed mainly to the following factors:

1. Condition of medicinal substances (state of purity and official tolerances, hydration, etc.).
2. Accuracy of apparatus.
3. Personal factors.

At present, the only way factor 1 can be controlled by most pharmacists is by purchasing chemicals and other medicinal agents from reliable drug manufacturers and keeping the articles under proper conditions to prevent alteration as much as possible. Factor 2 has been discussed elsewhere in the paper. Factor 3 should have been taken care of in the course of the pharmacist's education.

Theoretically then, liquid preparations should be compounded with a greater degree of precision than could be expected of other types of medicinal preparations. Let us see if this is the case. Eight prescriptions for codeine sulfate and one for

codeine phosphate in various syrupy vehicles were filled and tested. The results are given in Table II.

TABLE II—PRESCRIPTIONS CONTAINING CODEINE

LAB. No.	CODEINE SULF. PRESCRIBED IN GR.	CODEINE SULF. FOUND IN GR.	DIFFERENCE IN GR.	% ERROR
41-199	6	5.22	0.78	-13.0
41-200	6	5.70	0.30	-5.0
41-337	8	8.22	0.22	+2.8
41-338	6	5.37	0.63	-10.5
41-339	6	5.46	0.54	-9.0
41-454	6	6.54	0.54	+9.0
41-1132	6	5.85	0.15	-2.5
44-394	8	7.61	0.39	-4.9
45-51*	6 (Phos.)	4.83	1.17	-19.5

* This sample also contained 26.3% more ammonium chloride than was prescribed

The values given in Table II show an average deviation of $\pm 8.5\%$ in the codeine salt content.

Four prescriptions for 3% ephedrine hydrochloride were purchased and tested. Three preparations showed variations of $+6.7\%$, -6.7% , and $+6.7\%$. The fourth preparation showed a variation of -3.3% , but ephedrine sulfate had been substituted for the hydrochloride.

Results obtained with a number of prescriptions in which the amounts of the active medicinal agents in the solutions were determined are given in Table III.

TABLE III—PERCENTAGE ERROR IN PRESCRIBED SOLUTIONS

LAB. No.	INGREDIENT	AMOUNT PRESCRIBED IN GR.	AMOUNT FOUND IN GR.	DIFFERENCE IN GR.	% ERROR
40-1302	Sod. Iodide	120.0	115.2	4.8	-4.0
40-1304	Ammon. Iodide	90.0	83.6	6.4	-7.1
40-1308	Sod. Iodide	120.0	120.0	0.0	0.0
40-1309	Ammon. Iodide	90.0	89.4	0.6	-0.7
40-1312	Argyrol	68.1	61.6	6.5	-9.5
40-1313	Argyrol	68.1	68.6	0.5	+0.7
41-153	Pot. Iodide	120.0	119.1	0.9	-0.8
42-286	Phenol	180.0	152.0	28.0	-15.5
42-287	Phenol	180.0	139.6	40.4	-22.4
42-1081	Phenol	180.0	160.4	19.6	-10.9
43-191	Sod. Bromide	360.0	374.9	14.9	+4.1
46-281	Protargol	4.54	5.28	0.74	+16.3
46-632	Iodine	23.1	21.6	1.5	-6.5
46-632	Pot. Iodide	46.3	56.4	10.1	+21.8
46-633	Pot. Iodide	454.0	345.4	108.6	-23.9
46-679	Boric Acid	36.4	17.4	19.0	-52.2
46-701	Silver Nitrate	45.4	44.5	0.9	-2.0
47-303	Silver Nitrate	5.0	4.6	0.4	-8.0
47-304	Silver Nitrate	5.0	5.0	0.0	0.0
47-305	Silver Nitrate	5.0	4.8	0.2	-4.0
47-306	Silver Nitrate	5.0	4.8	0.2	-4.0
47-307	Silver Nitrate	5.0	5.4	0.4	+8.0

Stewart⁹ reported results obtained with eight prescriptions for ammonium chloride 1 oz. and sufficient distilled water to make 4 fl. oz. The net volumes varied from 99.7% to 105.2% of the prescribed amount. Seven samples varied between 92.4% and 95.6% of the prescribed amount, a maximum variation of -7.6%. One sample contained only 73.6% of the prescribed amount of ammonium chloride, showing a variation of -26.4%.

Stewart also tested five prescriptions for phenol 0.65 Gm., magnesium sulfate 1.3 Gm., and sufficient glycerin to make 15 cc. He reports that the net volume varied from 86.0% to 102.0% of the amount prescribed. Phenol content showed a variation of -68.6% to -38.6% from the prescribed amount. Magnesium sulfate content showed a variation of -67.9% to -0.3%.

He does not give all the values and it is possible that the extremely wide variation with magnesium sulfate was caused by one very bad sample. This still leaves the poor results with phenol to be explained. After due consideration we must conclude that the reported results are nothing to cheer about.

Ointments

Three prescriptions for ammoniated mercury 30 gr. and white petrolatum 1 oz. to be made into an ointment (510 gr. or 1.063 oz.) and two for ammoniated mercury 25 gr. (505 gr. or 1.051 oz.) were filled and tested. The results are shown in Table IV.

TABLE IV—OINTMENTS OF AMMONIATED MERCURY

LAB. NO.	NET CONTENTS	VARIATION IN PER CENT	HgNH ₂ Cl PRESCRIBED IN GR.	HgNH ₂ Cl FOUND IN GR.	DIF- ERENCE IN GR.	ERROR IN PER CENT
	IN OZ. (APOTH.)					
42-20	0.68	-36.0	30.0	32.0	2.0	+6.7
42-285	0.74	-30.4	30.0	35.2	5.2	+17.3
42-288	1.61	+52.4	30.0	26.3	3.7	-12.3
42-293	0.90	-14.4	25.0	20.7	4.3	-17.2
42-638	0.92	-12.5	25.0	20.3	4.7	-18.8

The aim of the first three prescriptions was to prepare a 5.9% ointment of ammoniated mercury. The actual strengths of these ointments in the order given above were 9.8%, 9.9%, and 3.4%. The last two ointments should have contained 5.0% of ammoniated mercury. The concentrations found were 4.8% and 4.6%. It appears that the first two pharmacists dispensed ammoniated mercury ointment U. S. P. XI.

Other Extemporaneous Preparations

In addition to the all too few prescriptions which are obtained for checking purposes many preparations are obtained from drugstores for routine check analyses. In Maryland, the drug

inspectors are directed to obtain many extemporaneous preparations.

In these cases the pharmacist almost always knows that his preparation is being obtained for checking purposes. But, since he must compound the requested preparation, the operation is practically equivalent to filling a simple prescription. These preparations are required to meet existing standards if they are official galenicals. The others are allowed a tolerance of $\pm 10\%$, except in unusual cases.

Experience has shown that there are certain extemporaneous preparations that will show a high percentage of samples outside the set tolerances. One of these is diluted hydrochloric acid. For one or more reasons, correctly preparing two fluidounces of this preparation seems very difficult, even when required apparatus is present.

Quite a few pharmacists apparently keep metric measuring utensils for no other reason than to comply with state regulations. If the directions for the preparation are given in the metric system they use less accurate utensils, and make a conversion from the metric to the apothecary system. What the introduction of a mathematical step will do, too frequently, to pharmaceutical accuracy is indicated by state board examination results and studies of prescriptions re-

quiring such a step. It does no good. Furthermore, some pharmacists do not know that directions for the preparation of diluted hydrochloric acid are given in the U. S. P.

It follows that, whatever the cause, inclusion of a large number of such samples in any survey would show the pharmacist in the most disparaging light. On the other hand, there are samples which pharmacists seem to have little difficulty in compounding with a fair degree of accuracy. Naturally, a large number of such samples will lower the over-all percentage of variation.

Let me emphasize that the samples included in this survey were not selected to make the com-

(Continued, page 561)

Antihistamine Drugs

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IT HAS been demonstrated that the release of histamine from the tissues is at least in part responsible for the symptoms of allergic manifestations. This has turned the attention of investigators to creating means by which the histamine would be made ineffective. Some have thought that injections of histamine would produce a tolerance to it; this has been pretty well disproved. The claim that the conjugated histamine (histamine-azo-protein or hapamine) would produce histamine tolerance has also been denied by most critical observers. The enzyme histaminase when incubated with histamine in the test tube destroys moderate amounts of the latter. However, when histaminase (torantil) is administered to the living animal or man it is ineffective.

Until recently the only effective methods of combating the histamine have been: (1) the relief of the symptoms produced by histamine by such drugs as epinephrine, ephedrine and aminophylline and (2) the immunizing injections of a specific antigen (for instance, pollen treatment), which develops a blocking substance interposing itself between the antigen (pollen) and sensitizing antibody, thus interfering with the allergic reaction. This method of immunization or desensitization is still the method of choice in the treatment of allergic disease. It offers more lasting effects and a more basic approach, and is not to be displaced by the new drugs which we shall presently discuss.

In the last few years a rather intensive research has been going on for an ideal antihistaminic substance. The search has been directed mainly to the type of chemical which is structurally constituted to displace histamine from the cell. The amino acids histidine, arginine and cysteine were such agents, but were too weak in their antihistaminic activity and too toxic.

In France, Fournau and his collaborators more than fifteen years ago began to synthesize new compounds displaying antihistaminic and anti-anaphylactic properties. Their first substances,

however, were too toxic for clinical use. The first useful French compound was Antergan, which has now been replaced by the less toxic compound, Neoantergan (*N*-*p*-methoxybenzyl-*N*-dimethylaminoethyl- α -aminopyridine).

In this country two antihistamine drugs have been placed on the market. These are benadryl (β -dimethylaminoethyl benzohydryl ether) and pyribenzamine (*N'*-pyridyl-*N'*-benzyl-*N*-dimethylethylenediamine). In addition there are many newer compounds which are now in the experimental stage and many of them are now undergoing trial by us. Some of these may be on the pharmacist's shelves in the near future. In this discussion, however, we shall consider mainly benadryl and pyribenzamine.

Clinical Uses

Pyribenzamine and benadryl have been found to be useful in the symptomatic relief of a number of allergic conditions. It should be distinctly understood that none of the antihistaminic drugs is more than a palliative remedy. At best they relieve symptoms only for a few hours following the administration of each dose and seldom do they relieve all symptoms completely.

A large percentage of seasonal hay fever sufferers obtain some measure of relief from pyribenzamine. Although benadryl does not help as frequently as pyribenzamine, it is nevertheless effective in many patients. An individual patient may respond better to one particular drug than to another. In my experience with pyribenzamine more than 80% of the hay fever sufferers obtain benefit. In some the relief is moderate, in others it is marked. Those patients who have had desensitizing injection treatment respond much better to the antihistaminic drugs when they are needed. The milder cases are helped more than the severe cases, and those who are helped early in the season may not be helped as the season advances.

The first part of the ragweed season of 1947 was very mild and I can safely predict that some of

those hay fever sufferers who obtained relief from these drugs during that time will be greatly disappointed in heavier seasons. The symptoms benefited most are the tickling and sneezing. The nasal obstruction responds least and those who have obstruction as the major complaint may fail to receive material benefit.

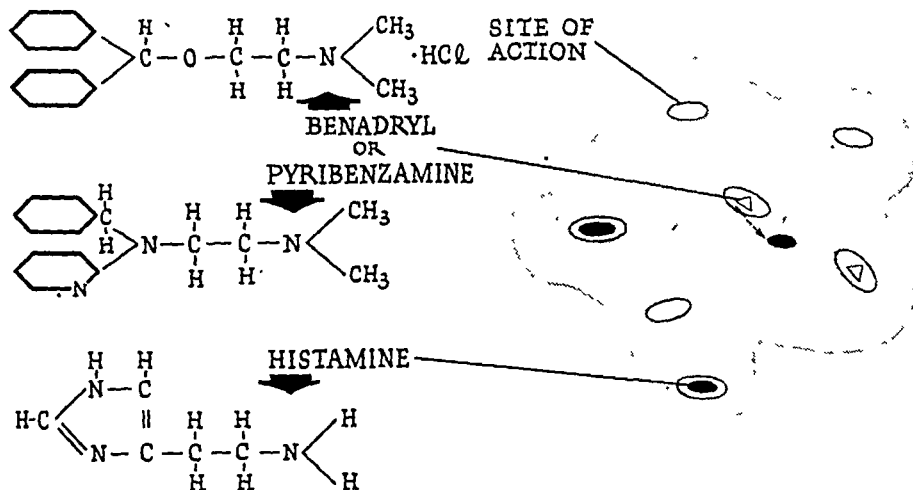
It is important to note that about one-third of all seasonal hay fever patients have an associated asthma. In the majority the asthma does not respond to the antihistaminic drugs, although the pollen injections usually prevent this complication. The chronic perennial vasomotor rhinitis (year-round hay fever) responds pretty well to pyribenzamine, but not as well as the seasonal type.

Urticaria and angioneurotic edema are helped by benadryl or pyribenzamine in about 80% of the cases. The itching is the symptom most likely to be benefited while the swellings are more resistant. The reactions from penicillin, sulfonamides and other drugs respond well to the antihistaminic drugs. The itching of atopic dermatitis (eczema), pruritus ani and vulvae and

some other types of itching is also frequently relieved. Here again it should be emphasized that these drugs are only of value for symptomatic benefit and that the duration of the disease is about the same as it would have been without the drug.

Unfortunately, an erroneous impression has been created among physicians that pyribenzamine and benadryl are the drugs of choice in the treatment of asthma. Every week I see patients who have been dosed for a long time with these drugs without effect against the asthma, whereas the substitution of ephedrine, aminophylline or iodides may produce marked improvement in twenty-four hours. The antihistaminic drugs have been of little value in the actual asthmatic state. Occasionally they may be of synergistic aid if combined with ephedrine or aminophylline. In the spasmodic allergic cough without dyspnea these drugs may be of some value.

These drugs have a high incidence of unpleasant side actions. In the usual therapeutic doses benadryl produces such symptoms in 50%



THE MAJOR MECHANISM of allergic reaction involves abnormal production of histamine in the tissues, according to present concepts. Research has been aimed at blocking the exaggerated histamine effects in allergy patients. Some compounds having a chemical structure similar to histamine are believed to unite with the same portions of the cell that would unite with histamine. Benadryl and pyribenzamine have this structural relationship (see formulas), and the concept of their antihistamine action is illustrated diagrammatically above.

Ordinarily histamine would be adsorbed by the sites of action in a receptive cell, producing physiologic histamine effects. When an antihistamine drug reaches the cell it is thought that, because of structural similarity to histamine, it replaces histamine at the site of action. Supposedly no particular physiologic action then occurs. The abnormal histamine metabolism causing allergic symptoms is thus brought under control. This may be considered as a competitive action: The benadryl or pyribenzamine enters some of the sites of action in the cell (as shown in the diagram) thus making them unavailable to histamine.

of the patients, while pyribenzamine affects 23%. The most common complaint is lassitude or sleepiness. This is more frequent and more severe with benadryl, but is also common with pyribenzamine.

While many patients are totally unaffected, the effect on others is so intense that they must forsake their activities and go to bed. Others who keep on their feet may be lacking in alertness, be unable to concentrate and may display defects in coordination. The potential dangers arising from such blunting of the sensorium and diminution in alertness in large numbers of persons are quite evident. This constitutes a very important problem for which the pharmaceutical manufacturer, the physician and the pharmacist must hold themselves responsible.

Other undesirable actions of these drugs may be dizziness, gastric irritation, loss of appetite, diarrhea, palpitation, nervousness, dryness of the mouth and throat and insomnia. In some instances the untoward effects may be obviated by substitution of another antihistaminic drug. In other instances the undesired effect may be combated by remedial drugs. For example, sleepiness might be treated by amphetamine or desoxyephedrine. However, the side reactions are so variable qualitatively and quantitatively that it would be next to impossible to counteract these effects efficiently and without producing other undesirable effects.

Several cases of more serious reactions have been noted, and the possible remote effects on the nervous system, blood, liver and other vital organs have not been yet determined. The frequency and variability of such toxic actions are enough of a challenge to the physician when he prescribes for his patient. Any pharmacist who is tempted to sell such drugs over the counter is certainly toying with danger.

Administration and Dosage

Pyribenzamine is dispensed in 50-mg. scored tablets. The average dose is 50 mg., although many respond to 25 mg. and others require 100 mg. or more. The drug is also put up in the form of an elixir, 20 mg. to the drachm. Small children need 10 to 25 mg., while older children tolerate about the same doses as adults.

Benadryl is dispensed in 50-mg. and 25-mg. capsules and in an elixir containing 10 mg. to the drachm. The doses are about the same as for pyribenzamine, except that the larger doses are not tolerated as well.

The frequency of administration is about every four to six hours when the symptoms are con-

tinuous. In most cases, however, it is best to direct the patient to take the drug only when he needs it. Frequently this means only once a day or even once in several days.

There is a great deal of misunderstanding about the use of these drugs. From the nature of their action it is apparent that they should not be administered for hay fever prior to the onset of the hay fever season. When the antihistaminic drug is effective it is as efficient in relieving as in preventing allergic symptoms. In most allergic conditions it is neither necessary nor advisable to have the patient take the medication a number of times daily without regard for the presence or absence of symptoms. When administered under such conditions the drug is frequently given credit for producing benefit when the actual allergic symptoms would not have been present without the drug. The undesirable side actions and the possibility of producing drug tolerance are further arguments against the unnecessary use of these helpful agents.

Very early in our experience with these drugs we had shown that when they were applied locally they were effective in inhibiting the whealing and itching from histamine and locally applied allergens. This led me to think that such topical application might be useful in eczema and other itching skin conditions. After considerable preliminary trials we found that the most effective form was an ointment containing about 2% of pyribenzamine.

We have used chiefly two types of ointment: one with a petrolatum base, the other with a water-soluble base. The latter appears to be more desirable in most instances. This ointment may irritate highly sensitive or acutely inflamed skins, but is very useful in the subacute and chronic itching dermatoses. I understand that many pharmacists are filling the physician's prescriptions for this item by preparing an ointment in which the triturated pyribenzamine tablets are incorporated. At this writing the ointment has just been placed on the market by a manufacturer. I may add that a number of the other antihistaminic drugs can also be used for ointments.

Other Antihistaminic Drugs

The field of antihistaminic drugs has attracted the attention of many pharmaceutical houses. The research chemists and pharmacologists of a large number of these industries are feverishly at work attempting to find a drug which will come closer to perfection in its activity and freedom from undesirable side actions.

Some manufacturers might of course be satisfied with a competitive product, even though it were no better than those now available. There is some justification for such an attitude. I have found that a particular drug having a lower therapeutic efficiency index than another may constitute the most effective drug for a particular person.

I have had the privilege of being on the ground floor of the investigation of a large number of these compounds in my experimental laboratory and in my practice. Sometimes this trust that the manufacturer has placed in me may prove embarrassing, as was the case with one identical drug which two manufacturers submitted to me, neither of them knowing for many months that the other had synthesized it.

The reader will understand that I cannot discuss the chemistry nor the experimental and clinical developments of the newer drugs. I may say that there are some interesting materials in our hands and that some of them will be introduced to the pharmacist in due time. If any reader has the notion that a new drug of this

type is developed and readied for distribution in a fortnight or so, it should be dispelled by the following estimate of an average life cycle in development of a reliable compound of this type:

1. Preliminary experimentation and screening by chemists and pharmacologists.....	2 years
2. Biologic investigation by manufacturer.....	1 year
3. Experimental and clinical investigation by key expert or experts.....	1 year
4. More general experimental clinical trial.....	1 year
Total	5 years

Some may take more and some much less time, but all require the above numerical procedures. Since my participation constitutes chiefly that encompassed in step number 3, it is not too difficult to foresee that the pharmacist's shelf should contain in a year or two still more effective prescription drugs for treating allergies.

R_xR_xR_xR_xR_x

WIDER FIELD OF BENADRYL THERAPY STUDIED

DIPHENHYDRAMINE (Benadryl) and related drugs may have many unexplored uses. Results suggesting that the drug may gain a broader application in therapy were obtained in a study by Drs. L. S. Blumenthal and M. H. Rosenberg of George Washington University, Washington, D. C.

In a report on use of diphenhydramine to treat 140 cases of various allergic conditions, or states presenting similar symptoms, some of the most encouraging results were obtained in contact dermatitis. Although the series of patients was small, the physicians are of the belief that the drug will find a place in the treatment of contact dermatitis. Previous reports represent divided opinion concerning the value of such therapy. Of 16 patients treated by Blumenthal and Rosenberg 12 received pronounced relief and four were moderately improved.

Of 29 patients with hives, 24 received pronounced relief, one obtained moderate relief and

four did not receive any significant relief.

Of 23 patients with seasonal hay fever, 15 received pronounced relief, five obtained moderate relief and three were not benefited.

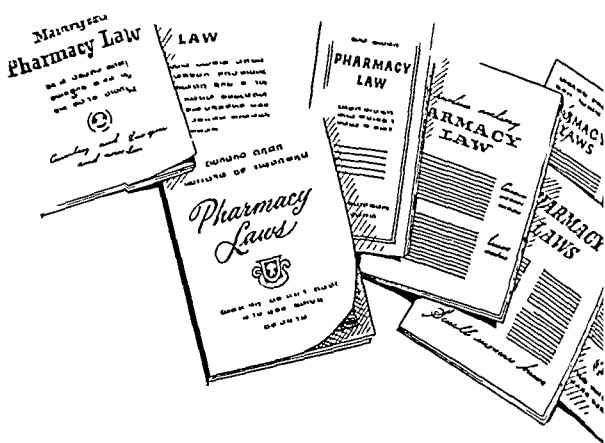
Of 11 patients suffering with migraine, four received pronounced relief, two obtained moderate relief and five received no relief.

Diphenhydramine did not prove particularly effective in bronchial asthma cases.

The drug was also given to a number of patients undergoing blood transfusions. Results, although inconclusive, were considered to suggest possible effectiveness of the drug in preventing transfusion reactions.

Treatment of various other conditions was reported but not evaluated because of the small number of patients in the series. The investigators conclude, however, that there should be more extended studies of the antihistaminic drugs in this field.

—*J. Am. Med. Assoc.*, 135: 25, 1947



PHARMACY DIAGNOSED AS SUFFERING
FROM LEGAL MALNUTRITION...PASSAGE
OF RESTRICTIVE LAWS IS NEEDED IN
INTEREST OF PUBLIC AND PROFESSION

NEED FOR MODERN PHARMACY LAWS

by LESLIE D. HARROP

GENERAL COUNSEL, AMERICAN DRUG MANUFACTURERS ASSOCIATION

PHARMACY appears to be suffering from legal malnutrition. This diagnosis is like one that an outside physician might give when brought into consultation on a case possessed of many puzzling aspects. It may well be that you, as the patient, will disagree entirely with the suggestion that anything is wrong. Nevertheless many of your own experts feel the patient is in need of some beneficial change.

This discussion will not be addressed to the precise therapy necessary to remedy the ailment. It will be an analysis of the factors considered and evaluated in coming to the conclusion that there is a real need for modern, strong pharmacy laws.

Carrying the simile a step farther, there are elements of the pharmaceutical profession who, like many other patients, just will not eat a correct diet. Other elements seem to find difficulty in synthesizing the foods ingested. More bluntly, there are portions of the profession who seem entirely indifferent to the long-range welfare of pharmacy so long as the profit side of the ledger is satisfactory today. Other elements are so anxious to keep their feet in the clouds that they refuse to recognize factors of serious danger to the very existence of the profession.

Pharmacy, one of the oldest of professions, is today regulated and presumptively protected by a patchwork makeshift of laws that have collected on the statute books of the several states over periods as long as a century.

Recognition of this problem is not claimed as new. For a number of years there has been increasing effort to recodify and modernize these laws. The AMERICAN PHARMACEUTICAL ASSOCIATION naturally has played a leading role in this work. But merely to draft an ideal bill manifestly is not enough. The bill must gain the approval of the legislature and become law to be of value.

First it might be well to pause and ask ourselves a question that will seem quite unessential when addressed to the members of this ASSOCIATION. Namely: "Is there a place left for the profession of pharmacy?"

Putting aside your momentary resentment that anyone in this day and age would pose that question, let us examine it. The profession of pharmacy is more intimately connected with trade and merchandising than is any other recognized profession. This change has come about gradually but surely through the years. We are not confusing the compounding of prescriptions and the sale of drugs generally in making that statement. Thought is being given to the vari-

ety of merchandising efforts that go on day after day throughout the modern drugstore. A great many of these have little or no real connection with the profession but have proved to be profitable lines of merchandising.

So to the extent that a pharmacist is thus engaged we will have to admit that the profession is not a requisite. If illustration be needed, let us point to the soda fountain, the cigar counter, and the non-drug sundry and notion business that has pervaded the drugstore of today. Furthermore there is a trend today toward establishment of so-called "super" stores that more nearly resemble a department store than the drugstore or pharmacy of tradition.

Thus we find that a fair portion of the activities of the professional pharmacist is directed to other than pharmaceutical pursuits in many cases. Naturally this has invoked commercial rivalry from businesses of a similar character over these sidelines. It would be expecting less than normal human responses to consider it other than natural that restaurant owners would resent the drugstore lunch counter business, that cigar store owners would consider themselves the natural rivals of the drugstore cigar counters, and on ad infinitum.

One or both of two things usually happens in such cases. Competition may manifest itself by sharpened activity along the line undertaken by the drugstore or the other store may undertake a digression into the fields normally served only by the pharmacist.

Before exploring this more fully, let us return for a moment to our question as to the continued need for the profession of pharmacy.

Every profession has been created based upon a public need for experts in that field. To protect the public from imposition by persons pretending to possess the qualifications of such experts, laws are passed setting forth minimum standards of education and training that must be possessed by those entitled to hold themselves out as members of the profession. Thus we have formed a legal monopoly. Medicine, law, pharmacy and other recognized professions have been granted a monopoly in the privilege of their practitioners to perform certain skilled services for which they have been specially trained.

Unless, however, the law does grant a real and genuine monopoly in these fields of skill, newcomers will not be attracted to the profession and in time it will cease to exist.

We must remember that in using the words "legal monopoly" we are talking about one created by law for the benefit of the public at

large. It is necessary that the public, for example, be protected in going to a person holding himself out as a physician by first being assured that he is well trained for his work and, second, that he, and only persons so qualified, can so serve the public. Likewise in law. And the same in pharmacy.

A Continuous Struggle

No profession has ever existed that did not struggle continuously to improve the standards of its own services. Nor did a profession ever exist that has not had to fight continuously against encroachment by those who would reap the rewards paid to those possessed of the superior skill but without incurring the expenses of time and money in qualifying for such services.

To prove that pharmacists do not have a unique problem in this respect, we can look to the constant litigation against those who try to practice the healing arts without proper training for such services. Lawyers are constantly battling against the encroachment of individuals and corporations seeking to sell legal services for a profit without the prerequisite preparation for and admission to the bar.

So aside from the purely commercial avarice created by the expansion of drugstores into foreign fields, there is an increasing desire to trespass upon the field carved out by law for phar-

ABOUT THE AUTHOR

Leslie D. Harrop (shown in the photograph on the facing page) was born at Ashland, Kentucky, in 1901. He is a graduate of Albion College (Michigan) and the University of Detroit Law School. Prior to engaging in legal work in the pharmaceutical field, Mr. Harrop served as assistant attorney general of Michigan and as chief counsel to the Michigan State Banking Department.

He is now general counsel for the American Drug Manufacturers Association and also general counsel for The Upjohn Company. In these capacities and as a delegate to the National Drug Trade Conference, Mr. Harrop has gained a broad background upon which to base the accompanying discussion of the practicing pharmacist's position in relation to the need for modernized pharmacy laws.

The author is a member of the State Bar of Michigan, American Bar Association, New York State Bar Association and the American Judicature Society.

macy. Too frequently the law is inadequate in properly defining this field.

We have seen grocery stores try to invade the field of drug sales by attempts to market vitamin preparations in pharmaceutical form. So far these efforts have failed. Pharmacy cannot, however, thank the law for protecting it from this incursion. The failure was a direct result of public refusal to buy from grocers. There was almost universal realization of the fact that only the pharmacist is qualified to dispense such products.

There is, however, an ever-increasing easing into this field as more and more news counters, eating places, cigar stands and the like offer headache remedies, antacids and other drugs for common ailments. Most of this can be traced back to hopelessly outdated and inadequate pharmacy laws.

Recognizing all of these trends as matters of rather common knowledge, it becomes desirable to inquire further and see if in addition there are any other factors that bear upon this all-important issue of securing the enactment of modern, effective and strong pharmacy laws.

Against Powerful Opposition

Certainly along this line it is necessary to recognize that there is always powerful opposition to the restrictive character of a well-drafted pharmacy law. This observation is made with no intention of arguing with such groups the correctness of their position from their viewpoint. We are not considering in this relation the familiar and wholly logical exceptions to be found in most pharmacy laws for sales of certain common household remedies by general stores remote from pharmacies or drugstores. This is a matter of furthering the protection of the public, which is the chief aim of the pharmacy law. But these opposition pressure groups seek to widen this breach and build up a general exemption from exclusive sale in the drugstore of an ever-increasing number of drug products.

Carried to its quite logical conclusion the efforts of these groups, if successful, will within a short time leave the prospective pharmacist with the dubious distinction of being able to say he is the only person who can fill prescriptions. And he will also realize that without a day of training in pharmacy John Jones, who had the minimum amount of common schooling, can sell in the corner grocery store about ninety-five per cent of the medicines used by the public.

These efforts in opposition to passage of new pharmacy laws are not confined to the cloak-

rooms of the legislatures. Clever advantage is taken of all angles offered by all related laws.

Such opposition can be summed up as a desire to ride with the horses and run with the hounds. Those who seek to broaden the exemptions from the restrictive features of the pharmacy laws are most desirous of the friendship and cooperation of the pharmacist. But we submit that self-interest often causes them to fall short of true friendship that should have the genuine well-being of the profession at heart.

What are some of the collateral forces that have a bearing upon this important matter?

FDA—Two Administrations

In Washington we have the Federal Food and Drug Administration. Do not anticipate my remarks improperly. I am not going to say or insinuate that this fine governmental body is a party wittingly to anything detrimental to the pharmacist. Certain of their activities, however, definitely can have that effect if they are allowed to be twisted and turned for that purpose.

In the first instance, since its inception in 1906 with the passage of the Wiley Pure Food and Drug Act, that agency has always been directed by individuals more concerned with foods than with drugs. This is rather logical when you consider the enormous size of the food industry compared to that of the drug industry. Dr. Wiley, Mr. Campbell and the present Commissioner, Dr. Dunbar, were and are men well trained in their fields. There have been from time to time very able men as head of the Drug Division of the Food and Drug Administration, but always there has been at the top a man more concerned with food than with drugs. Sometimes it has been a bit disheartening to sit down to discuss the difficult and grave task of controlling important drugs only to find top officials of the Food and Drug Administration, in groping for comparisons, talking in terms of canned peaches or canned shrimp.

It would seem wholly logical and for the best interests of all concerned if the head of drug control in the Federal government should be a man trained in pharmacy who has that field as his principal interest. Maybe this would require splitting the Food and Drug Administration into a Food Administration and a Drug Administration. This should not be too difficult, however, since both would be but arms of the Federal Security Agency.

Whatever the means used to gain more pharmacy-conscious control from Washington, it

has a strong bearing upon the principal issue here because the present law presents difficulties of interpretation in these conflicting fields. Much of the support claimed by the grocery group trying to break into the vitamin market was from the ruling of the Food and Drug Administration that such products were subject to the control of the special dietary foods section of the law. Maybe the courts ultimately will say this was the intent of Congress but one can be permitted to wonder if the same ruling would have been made if drugs were being controlled by a separate arm of the agency freed from foods.

Let me again emphasize that this is neither criticism of the men heading that agency nor an expression of doubt as to the sincerity of purpose back of the rulings discussed.

It is of importance, however, as another piece in the pattern of what is to become of pharmacy. If we now strip from the pharmacist his right to control the sale of nutritional pharmaceutical products by vaguely defining them as foods, we have further narrowed the exclusive field granted him by his profession.

Then there is another queer quirk of circumstances where, as they often say of courts, hard facts make bad law. Under the Food, Drug, and Cosmetic Act in section 502 (f), requirement is made that drugs be sold under labels bearing adequate directions for use. Power is granted, however, to make exemptions from this requirement where such provisions are not necessary to protect public health. Originally the regulations permitted marketing of any drug under the exemption provision if it was labeled "Caution: To be used only by or on the prescription of a physician." Later under two different pressures this was modified. First some pharmacists complained that a labeling burden was placed on them by the exemption. Secondly the Food and Drug Administration was faced with an enforcement problem that defied their attempts at solution. They did not feel they were effectively controlling such products by limiting them to prescriptions or seeing that the pharmacist relabeled them in a satisfactory manner

A Look at the Record

Because of this double pressure the regulations were modified, and today all drugs except those too dangerous for lay use are required to bear adequate directions.

Turning to the *Congressional Record* to seek the intent in the enactment of the Food, Drug, and Cosmetic Act, you find such statements as:

"The Act was not made for experts nor is it intended to prevent self-medication; - it was enacted to make self-medication safer and more effective; and to require that drugs moving in interstate commerce be properly labeled so that their use as prescribed may not be dangerous to the user." Neither in this statement or elsewhere in the *Record* will you find any indication that this Act was intended to drive the patient from the physician and make him seek refuge in self-medication. It was not intended to extend or promote self-medication. It was aimed at making self-medication, when undertaken, a safer method of treating disease by giving to the layman who chooses to be his own doctor better information concerning the properties of the drug he proposes to use.

Veering from the Intent

From such intent, however, these new regulations have veered sharply. Instead of a law to assure adequate labeling, it has been twisted into a law to promote self-medication.

Regardless of the desire of an ethical drug manufacturer, of a pharmacist or of the physician for products labeled to be used as directed by the physician, these new regulations require adequate directions.

No court challenge has been made directly upon these regulations to date. The American Drug Manufacturers Association protested their enactment vigorously. A recent California case held that "to be used as directed by the physician" was an adequate direction but we do not yet know whether this is a judicial trend that will prevail.

Under this set of circumstances and with this background, those who seek to increase the exemptions from the restrictive provisions of the pharmacy laws took advantage of the confusion to proclaim that there exist today only two types of drugs, to wit, those to be sold as packaged medicines across the counter and those limited to prescription. This was carried even further in an attempt to prove that there today remain no distinguishing characteristics between an "ethical" drug and a "proprietary" drug. This latter contention can be readily dismissed as wishful thinking.

The former contention cannot be dismissed so lightly. Whether so intended or not, such construction could well mean that every drug, except those restricted to prescription sale, would be placed in the same category. Thus if the pharmacy law has exemption for the sale of pack-

aged medicines it might well be held to encompass ninety-five per cent of the drugs in general use today.

Is There a Place for Pharmacy?

Having examined a number of apparently remotely related matters and seeing how well they dovetail into a pattern of opposition to the proper type of pharmacy law, possibly we have reached the point where we can give positive answer to the original question of: "Is there a place left for the profession of pharmacy?"

Of course and naturally there is a demand for the profession of pharmacy. But that demand must be coordinated with strong restrictive laws

that give to the pharmacist the exclusive right to practice his profession for the betterment of mankind.

Such laws must be passed over growing attempts to dilute them with exceptions in favor of the butcher, the baker and the candlestick-maker. You cannot have continuance of pharmacy based upon a sole and exclusive right to fill prescriptions.

If the pharmacist is to meet continued and growing competition from the grocer by way of defining nutritional drugs to be foods and if packaged medicines are to be salable by everyone, you are no longer going to be able to induce an appreciable number of young men and women to spend four years in a pharmacy college preparing themselves for a profession of such limited advantages.

We submit that the labeling burden imposed under the former regulations on prescription items is one that the pharmacist should have welcomed. It was a burden imposed upon him by virtue of his profession. It distinguished his right and ability to sell drugs from that of the untrained and unlicensed layman. It is extremely regrettable that it was ever considered a burden for truly it was not a burden in any greater sense than that the care of a patient is a burden upon the physician and that the handling of legal matters for a client is a burden upon the lawyer.

Responsibilities Go with Privileges

Responsibilities go with these privileges granted the professions. As this ASSOCIATION bends every effort to seek passage of these new laws to safeguard its professional future, let it ever be mindful of the burdens cast upon it by the public in return for these benefits to be conferred by such laws.

If there be any exceptions to the rule that drugs shall be sold only in drugstores, let it be confined properly to instances where geographical remoteness from a drugstore warrants permission for a general store to carry a limited number of common household drugs and drugs for emergency use.

Discount the public support of many of these trends that have been enumerated. Remember that the public refused to turn away from the pharmacist in the purchase of vitamins. Reward that faith and respect of the public for the profession by serving it well and dutifully and by insisting vigorously that the profession of pharmacy, and that profession alone, is the one and only one qualified to dispense drugs of every character.

G. D. BEAL CITED FOR SERVICE



A citation for service to pharmacy with distinction was presented to Dr. George D. Beal (right in photograph), A. Ph. A. council chairman and assistant director of the Mellon Institute for Industrial Research, by the New Hampshire Pharmaceutical Association at its 74th annual meeting. Dr. George A. Moulton (left), executive secretary of the N. H. P. A. and vice-chairman of the A. Ph. A. council, made the presentation and also bestowed upon Dr. Beal the gold medallion denoting honorary membership in the state association.

OPERATING STATEMENTS OF 1946

EVIDENCE that the upward trend in prescription practice is continuing and that in 1946 pharmacists on the average were more prosperous than ever before appears in the annual study of operating statements made by Eli Lilly and Company. In the publication just issued, the *Lilly Digest for 1946*, data from 1096 retail pharmacies are analyzed, of which 678 supplied separate and specific figures on operation of the prescription laboratory. The average costs, margins and profits of these 678 pharmacies are shown in Table I, classified according to the daily volume of prescription practice. A number of significant conclusions can be drawn from a study of the table. Some of these are:

1. The percentage amount of the gross margin rises with an increase in the proportion of prescription receipts to total sales. Thus, for each dollar from total sales the pharmacy owner has a larger proportion available for the payment of operating costs and for profit on the investment he has made in his pharmacy.

2. The percentage of the receipts paid for expenses rises with an increase in the ratio of prescription receipts to total sales. This increase is not as rapid as the rise in average gross margins.

3. Therefore, the average profit per dollar of sales rises with an increase in the ratio of prescription receipts to total sales.

4. The value, at cost, of the pharmacy's stock goes up with an increase in the ratio of prescription receipts to total sales. This rise in the value of stock on hand takes place at almost exactly the same rate as the rise in sales.

5. Therefore, the average rate of turnover of stock in pharmacies with the highest proportion of prescription receipts to total sales is almost exactly the same as for pharmacies filling a smaller number of prescriptions.

6. The ratio of prescription department stock increases with an increase in the ratio of prescription receipts to total sales. This increase in prescription department stock is not as great as the increase in prescription receipts per pharmacy.

TABLE I—AVERAGE COSTS, MARGINS AND PROFITS OF PHARMACIES COMPOUNDING IN 1946—

	1 to 5 prescriptions daily	5 to 10 prescriptions daily	10 to 20 prescriptions daily	20 to 40 prescriptions daily	40 and up prescriptions daily
Sales.....	\$41,779—100.0%	\$50,862—100.0%	\$60,421—100.0%	\$70,693—100.0%	\$113,224—100.0%
Cost of stock sold.....	29,177— 69.8%	35,736— 70.3%	41,139— 68.1%	46,827— 66.3%	72,104— 63.7%
Gross margin.....	\$12,602— 30.2%	\$15,126— 29.7%	\$19,282— 31.9%	\$23,866— 33.7%	\$ 41,120— 36.3%
Total expenses.....	9,433— 22.6%	10,970— 21.5%	13,967— 23.1%	17,198— 24.3%	\$ 29,062— 25.7%
Net profit.....	\$ 3,169— 7.6%	\$ 4,156— 8.2%	\$ 5,315— 8.8%	\$ 6,668— 9.4%	\$ 12,058— 10.6%
Value at cost of general stock.....	\$7015	\$8026	\$9110	\$10,443	\$16,521
Value at cost of prescrip- tion department stock..	\$1051	\$1611	\$2073	\$3121	\$5333
Prescription receipts.....	\$1292	\$3228	\$6831	\$12,945	\$32,891
Number of prescriptions filled.....	1010	2583	5318	9402	24,669
Average fee for prescrip- tions.....	\$1.28	\$1.25	\$1.28	\$1.38	\$1.33
Annual rate of turnover of general stock.....	4.2 times	4.5 times	4.5 times	4.5 times	4.4 times
Percentage of prescription department stock to total stock.....	15.0%	20.1%	22.8%	29.9%	32.3%
Percentage of prescription receipts to total sales...	3.1%	6.3%	11.4%	18.3%	29.0%
Percentage of prescrip- tion-sales dollar to each dollar invested in pre- scription stock.....	\$1.28	\$2.00	\$3.30	\$4.15	\$6.17
Average net profit per dol- lar invested in all stock	\$0.45	\$0.52	\$0.58	\$0.64	\$0.73

TABLE II—DISTRIBUTION OF 678 PHARMACIES BY SIZE OF CITY AND NUMBER OF PRESCRIPTIONS FILLED

POPULATION	PRESCRIPTIONS COMPOUNDED DAILY				
	1 to 5	5 to 10	10 to 20	20 to 40	40 and up
Under 5000.....	53%	34%	41%	32%	23%
5,000 to 20,000.....	8%	20%	18%	21%	42%
20,000 to 50,000.....	9%	10%	7%	16%	17%
50,000 to 100,000.....	5%	12%	7%	5%	5%
100,000 to 500,000.....	13%	14%	15%	17%	13%
Over 500,000.....	12%	10%	12%	9%	0%
Total.....	100%	100%	100%	100%	100%

7. Consequently, the ratio of the prescription-sales dollar to the dollar invested in prescription department stock is more than five times as great in pharmacies filling upward of 40 prescriptions daily as it is in drugstores which fill an average of no more than 5 prescriptions daily.

8. There is a steady rise in the average net profit per dollar invested in all stock carried by the pharmacy with an increase in the proportion of prescription receipts to total sales.

It will be noted from Table I that in pharmacies filling an average of no more than 5 prescriptions daily in 1946, prescriptions receipts for the year were \$1292. The value at cost of prescription department stock was \$1051. Assuming a gross margin of 50% the average rate of turnover of prescription stock would be only once every twenty months. In the pharmacies studied which filled 40 or more prescriptions daily, prescription receipts averaged \$32,891. The prescription department stock amounted to \$5333 per pharmacy. If we again assume an average margin of 50% the rate of turnover on prescription stock is once every four months. This fact reflects the marked advantage of developing prescription practice. It is also evident that in a pharmacy with prescription receipts of only \$1292 a small amount of the pharmacist's time

will be occupied in supplying this professional service. On the other hand, prescription receipts of \$32,891 are sufficient to keep one or more pharmacists occupied exclusively in the prescription laboratory.

Table II shows the distribution of the 678 pharmacies by size of city and number of prescriptions filled.

A further analysis of average volume of daily prescription practice on the basis of geographical distribution is shown in Table III.

There is no evidence in the Lilly report to support the contention of some pharmacists that the time, effort and funds devoted to a prescription laboratory are out of proportion to the income obtained. The Lilly studies over the past fifteen years have repeatedly demonstrated that the contrary is true. A rise in the proportion of prescription receipts to total sales results in an increase in income and profit of an even larger amount.

The 1946 Lilly study again indicates that there is no basis for a belief that prescription practice reaches a markedly high peak during only a few winter months. In the 678 pharmacies reporting, prescription practice on the average was at a minimum during June and July but was only 16 to 17% below the peak period of January. All

TABLE III—GEOGRAPHICAL DISTRIBUTION OF PHARMACIES BY NUMBER OF PRESCRIPTIONS FILLED IN 1946

	PRESCRIPTIONS COMPOUNDED DAILY				
	1 to 5	5 to 10	10 to 20	20 to 40	40 and up
New England States.....	3%	11%	9%	7%	10%
Middle Atlantic States.....	6%	18%	22%	17%	11%
East North Central States.....	47%	30%	15%	14%	10%
West North Central States.....	21%	18%	13%	21%	11%
South Atlantic States.....	1%	5%	7%	6%	16%
East South Central States.....	0%	0%	3%	8%	11%
West South Central States.....	3%	6%	10%	11%	16%
Mountain States.....	10%	11%	9%	4%	1%
Pacific States.....	9%	1%	12%	12%	14%
United States.....	16%	17%	31%	21%	15%
Canada.....	20%	20%	40%	17%	3%

other months, were only 3 to 12% below the maximum January volume of prescriptions. Month to month variations in the number of prescriptions filled were not significantly affected by geographical location. There was also little variation from month to month in the number of prescriptions filled when the pharmacies were grouped by the size of cities in which they are located.

In 1946 and other years the Lilly analyses of pharmacy operations revealed that quite a number of pharmacists do not keep a record of the number of refilled prescriptions. The *Lilly Digest* points out that this is a mistake since failure to keep a record of prescription refills is likely to result in a marked underestimate of the income and profit from the prescription laboratory. On the basis of this study it appears that for every 100 prescriptions filled in 1946, about 60 were new prescriptions and 40 were prescriptions that were refilled. There was no consistent variation in the proportion of refilled prescriptions to total prescriptions when the reports were tabulated according to size of city. A month to month comparison shows that the ratio of about 60 new prescriptions to 40 refills is maintained throughout the year.

TABLE IV—GEOGRAPHICAL VARIATIONS IN AVERAGE PRESCRIPTION FEES

New England States.....	\$1.26
Middle Atlantic States.....	1.26
East North Central States.....	1.41
West North Central States.....	1.32
South Atlantic States.....	1.19
East South Central States.....	1.12
West South Central States.....	1.23
Mountain States.....	1.52
Pacific States.....	1.54
United States.....	1.33
Canada.....	1.30
Average.....	1.33

A study of the average prescription fees reflects income from professional service as well as price of materials, which again demonstrates the importance of prescription volume. Table IV shows the geographical variations in average prescription fees in 1946, which range from the lowest average of \$1.12 in the East South Central states to an average of \$1.54 in the Pacific states. The over-all average for the group of pharmacies reporting was \$1.33. Table V shows the variations in average prescription fees by size of cities.

A special study was made of a group of 199 pharmacies which made detailed reports both in

TABLE V—VARIATIONS IN AVERAGE PRESCRIPTION FEES BY SIZE OF CITY

Under 5000 population.....	\$1.21
5000 to 20,000.....	1.56
20,000 to 50,000.....	1.33
50,000 to 100,000.....	1.40
100,000 to 500,000.....	1.50
Over 500,000.....	1.37
Average.....	1.33

1945 and 1946. The figures on prescription receipts are shown below:

	1946	1945	Per Cent Increase 1946 over 1945
Average prescription receipts per pharmacy	\$11,389	\$9247	23.2%
Average number of prescriptions per pharmacy.....	8640	7603	13.6%
Average price for each prescription.....	\$1.32	\$1.22	8.2%
Per cent prescription receipts to total sales.	17.4	16.6	4.8%

Data on the over-all operations of these same pharmacies in 1945 and 1946 show that during the year there was a 17.7% increase in sales, 19.1% increase in cost of stock sold, and an increase of 15% in the gross margin. Total expenses increased 18.5%. In 1946 the average net profit went up 7.8% over 1945. The Lilly analysts conclude that there is a relationship between the above average profits in the 199 pharmacies and the increase in prescription receipts.

In addition to the 678 pharmacies reporting in detail on prescription practice there were 418 submitting operating statements only on the over-all operations.

For the total of 1096 pharmacies, sales reached a new high in 1946, averaging \$69,422 for the year. This represents an 11.9% increase over 1945 sales figures. The details of average costs and net profit, with a comparison between 1946 and 1945, are shown in Table VI.

The net profits earned by these 1096 pharmacies expressed in percentage is given below:

- 41% earned a net profit of over 10% of sales.
- 30% earned a net profit of 5 to 9% of sales.
- 14% earned a net profit of 2 to 4% of sales.
- 8% earned a net profit of less than 2% of sales.
- 7% operated at a loss.

The average profit of \$5951 per pharmacy in

TABLE VI—AVERAGE COSTS AND PROFITS OF PHARMACIES IN 1946 AND 1945

	1946	1945
Sales	\$69,422—100 0%	\$62,038—100 0%
Cost of stock sold	46,995— 67 7%	41,565— 67 0%
Gross margin	\$22,427— 32.3%	\$20,473— 33 0%
Expenses:		
Proprietor's or manager's salary	\$4590—6 5%	\$4342—7.0%
Employees' wages	6270—9 0%	5273—8 5%
Rent	1950—2 8%	1860—3 0%
Heat	270—0 4%	245—0.4%
Light and power	475—0 7%	372—0.6%
Taxes (except on building, income, and profit) and licenses	418—0 6%	498—0 8%
Insurance	264—0 4%	195—0 3%
Interest paid	60—0 1%	61—0 1%
Repairs	195—0 3%	253—0 4%
Delivery	118—0 2%	64—0 1%
Advertising	413—0 6%	311—0 5%
Miscellaneous	905—1 3%	684—1 1%
Estimated total depreciation except on buildings	352—0 5%	251—0 4%
Bad debts charged off	63—0 1%	59—0 1%
Telephone	133—0 2%	128—0 2%
Total expenses	\$16,476— 23 7%	\$14,596— 23 5%
Net profit	\$ 5,951— 8 6%	\$ 5,877— 9.5%
Value at cost of stock	\$10,487	\$ 9,459
Annual rate of turnover of stock	4 5 times	4 4 times

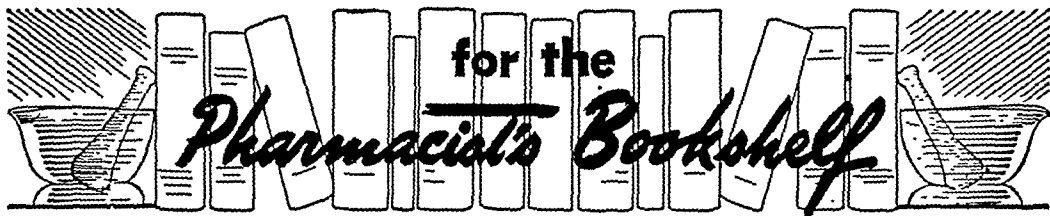
1946 was only \$74 more than in 1945, or, percentage-wise, 1.3%. This is remarkably small in view of the fact that sales increased \$7384 per pharmacy on the average, or 11.9%. The *Lilly Digest** points out that these figures show the very great effect on profits of small changes in gross margins and operating expenses. Compared with the sales increase of 11.9% the increase in the average gross margin was 9.5% in 1946 over 1945. With regard to operating expenses, it may be seen from Table VI that there was an increase of \$1880, or 12.9%, in 1946 over 1945—more than the percentage amount of sales increase.

This reflects an unusual situation, since a rise in total sales in a pharmacy ordinarily is accompanied by a drop in the percentage amount of receipts paid out for expenses. The increased 1946 expenses are due to several factors. Payments to employees were up almost \$1000 on the aver-

age. The percentage of receipts used for this purpose rose from 8.5% in 1945 to 9% in 1946. The average amount paid for rent increased slightly during this same period from 2.8% to 3%, but rent did not advance as fast as sales. It was considered significant that the incidental or miscellaneous costs—such as lights, taxes, insurance, repairs and advertising—took a total of 5.4% of receipts in 1946 as against only 5% in 1945. Ordinarily such expenses would not increase much with a rise in sales, but they actually went up \$545, or an average of a little more than \$10 per week. It was pointed out that this calls for additional vigilance concerning thousands of small individual expenditures.

Pharmacy stocks rose 10.9% from 1945 to 1946, which was a little less than the sales increase. In general, stocks were kept to a figure in 1946 more consistent with present volume of sales than was true during the past few years. It should be remembered, however, that any purchases for more than current needs are speculative purchases, and especially so at this time.

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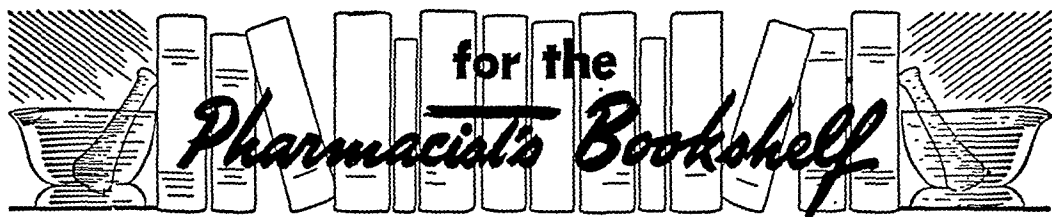
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and your community and state is explained clearly in the pamphlet.

THE HOSPITAL ACT AND YOUR COMMUNITY, U. S. Public Health Service, Washington 25; D. C.; single copies without charge.

DRUG AND CHEMICAL ANTIDOTES

An unusually well prepared booklet on antidotes for drugs and chemicals has been compiled and issued by the California State Board of Pharmacy. In this work the Board secured the cooperation of universities in the state and of public toxicologists and public health officials. A table of essential equipment and supplies, an outline of general procedures and specific instructions under individual toxic substances comprise the booklet. L. M. Walsh, Board secretary, indicates that single copies will be made available to non-Californians who have a particular interest in the subject.

CALIFORNIA OFFICIAL ANTIDOTES—*California State Board of Pharmacy*, 515 Van Ness Avenue, San Francisco 2; 30 pp., single copies without charge.

SUGARS IN PHARMACY

Pharmacists are well aware of the importance of sugars in formulating medication. Not many are

apt to have a clear idea of the extent to which sugars are used, and their fascinating history, without a reading of *Sugars and Sugar Derivatives in Pharmacy*.

The fact is that sugar was recognized as a medicine or as an indispensable ingredient of medicines long before it was valued as a food. In the historical portion of his booklet Dr. Pittenger concludes from the evidence that the production of solid sugar and its medicinal use goes back at least to 300 A.D.

The historical account is followed by short discussions of the nature, significance, and uses of the individual sugars. An appendix lists and classifies preparations of the U. S. P., N. F., and Pharmaceutical Recipe Book that contain sugars or sugar derivatives.

This survey of the role that sugars have played and continue to play in the practice of pharmacy is authored by an eminent pharmacist and life member of the A. Ph. A., Paul S. Pittenger, now vice-president of Sharp & Dohme, Inc. A. Ph. A. members will recall his service to the ASSOCIATION as first vice-president, member of the N. F. Committee and chairman of the Scientific Section.

SUGARS AND SUGAR DERIVATIVES IN PHARMACY—Paul S. Pittenger—*Sugar Research Foundation, Inc.*, 52 Wall St., New York 5; 53 pp., illus., no charge.



E. H. WIRTH, PHARMACEUTICAL SCIENTIST, DIES

ELMER H. WIRTH, one of the country's leading pharmacognosists and a member of the U. S. P. Revision Committee and the Committee on National Formulary, died on the evening of September 26 at the University of Illinois Research Hospital, Chicago. He was acutely ill for about four weeks, having been stricken immediately after returning from the Milwaukee convention of the A. Ph. A. His illness was diagnosed as myocarditis.

Dr. Wirth was born in North Amherst, Ohio, March 11, 1895. He obtained the Ph.C., B.S. and M.S. degrees from the University of Michigan, after which he joined the faculty of the Detroit Institute of Technology as professor of botany and pharmacognosy, and served concurrently as chief chemist for the F. F. Ingram Co. Later Dr. Wirth joined the faculty of the University of Illinois College of Pharmacy.

In 1931, he obtained his doctorate at the University of Leyden in Holland, as Netherlands-American Foundation Fellow under Van Itallie. Upon returning to the United States Dr. Wirth

resumed his duties at the University of Illinois, and in 1941 received the rank of professor of pharmacognosy and pharmacology, a post he held until his death.

He was an auxiliary member of the U. S. P. Revision Committee for two decades and since 1940 a member of the Revision Committee. Since 1935 Dr. Wirth had been a member of the Committee on National Formulary. For the past seven years he served as vice-chairman of the Committee and chairman of the Subcommittee on Pharmacognosy. The AMERICAN PHARMACEUTICAL ASSOCIATION, of which Dr. Wirth was a life member, is particularly indebted to him for conscientious service and extensive contributions to development of the drug standardization program of the National Formulary.

Dr. Wirth had also been a leader in the activities of the Plant Science Seminar for many years and its secretary since 1936. His extensive contribution to the science of pharmacy is reflected by many significant papers in the literature.

TOLERANCES (from p. 545)

pounding by the pharmacists appear more or less accurate. They include all the collected samples, which were to a great extent compounded in the drugstore. The classification of preparations as "extemporaneous" is based largely on the observations of Inspector H. Bernhardt who purchased them, on interviews with pharmacists, and the nature of the preparations. Let us look at some illustrative examples.

Diluted Hydrochloric Acid

During the past nine years the most consistently bad results have been shown in the preparation of diluted hydrochloric acid, U. S. P. The data obtained, and the extent to which these samples have influenced the composite picture of the precision of drug preparation, are shown in Table V.

The data in Table V show that two main factors influenced the percentage of samples found to be outside the accepted tolerances for all the collected preparations, which include manufacturer's samples as well as extemporaneous samples. Factor 1 is the ratio of the number of extemporaneous samples to the total number of samples. Factor 2 is the ratio of the number of diluted hydrochloric acid samples to the number of extemporaneous samples. Factor 2 loses some of its force in 1945; for, although there is a slight drop in the percentage of bad samples, the small number of diluted hydrochloric acid samples would be expected to cause a greater drop. It so happens that in 1945 the pharmacists proved that there are several other preparations that can keep the percentage of bad samples high.

Why is it so difficult to prepare a 10% solution of hydrochloric acid that will meet the official requirement? This solution is official in the U. S. P. and directions for its preparation are given there. One is directed to take 236 cc. of hydrochloric acid and

add water to 1000 cc. A tolerance of $\pm 5\%$ is allowed. The hydrochloric acid directed to be used is a solution containing 35% to 38% of HCl. The specific gravity of a 35% solution of hydrochloric acid is about 1.17, and for a 38% solution it is about 1.19. Using these figures, calculation will show that, depending upon whether the acid solution meets the minimum or maximum U. S. P. requirement, it is theoretically possible, by using the U. S. P. directions, to prepare diluted hydrochloric acid containing in each 100 cc. 9.7 Gm. or 10.7 Gm. of HCl, respectively. We find that the weaker solution is close to the lower limit of 9.5% w/v and that the stronger solution is actually an illegal preparation since it exceeds the higher limit of 10.5% w/v allowed by the U. S. P.

A few years ago we called attention to this fact, and the new U. S. P. XIII directs the use of 234 cc. instead of 236 cc. of hydrochloric acid in the preparation of the diluted acid. This can still yield preparations containing 9.6% w/v and 10.6% w/v of HCl. This change will tend to increase the number of unofficial samples of diluted hydrochloric acid, because even with the older formula the great majority of bad samples were lower than the minimum requirement of 9.5% w/v.

Obviously the tolerance of $\pm 5\%$ for diluted hydrochloric acid is not logical. I recommend that the rubric in the U. S. P. monograph be changed to read as follows: "Diluted Hydrochloric Acid is an aqueous solution containing in each 100 cc., not less than 9 Gm. and not more than 11 Gm. of HCl."

This would not solve the problem with respect to unofficial samples of this solution. In a review of the results obtained with samples of diluted hydrochloric acid purchased in 1943, W. F. Reindollar¹⁰ noted that 47% did not meet the official requirements, and he observed that if the

TABLE V—RELATIONSHIP OF COMPOUNDED PREPARATIONS TO PHARMACEUTICAL ACCURACY

YEAR	NO. OF TOTAL DRUG SAMPLES A	% SUBSTANDARD SAMPLES*	NO. OF EXTEMPO- RANEOUS SAMPLES B	RATIO OF EXTEMP. SAMPLES TO TOTAL SAMPLES $\frac{B}{A} \times 100$	No. of DILD. HCl SAMPLES C	RATIO OF DILD. HCl TO EXTEMP. SAMPLES $\frac{C}{B} \times 100$	% DILD. HCl SAMPLES SUB- STANDARD	% TOTAL SUBSTAND. SAMPLES DUE TO DILD. HCl
1937	1523	14	214	14	43	20	33	33
1938	1509	14	211	14	16	8	25	11
1939	1407	7	474	34	7	1.5	0	0
1940	1547	14	705	46	97	14	23	19
1941	1453	19	885	61	102	12	45	17
1942	1333	20	1006	76	160	16	50	27
1943	1274	21	896	70	175	20	47	31
1944	1477	21	971	66	137	14	45	20
1945	1412	19	920	66	50	5	38	7

* Samples did not meet official tolerances or a tolerance of $\pm 10\%$.

tolerance were doubled to $\pm 10\%$ there would still be 31% of the samples outside the 9% to 11% limits. Data show that a tolerance of $\pm 10\%$ would lower the percentage of substandard diluted hydrochloric acid samples for the year 1942 from 50% to 31%, and for 1944 from 45% to 28%. The $\pm 10\%$ tolerance would result in the lowering of the percentages of all substandard samples, as shown in Table V, for the year 1942 from 20% to 18%, and for the years 1943 and 1944 from 21% to 19%.

Other Preparations

The extemporaneously prepared samples for the year 1945 are given in Table VI. The number of each type of sample and the percentage of substandard samples indicate the influence which that type of sample exerts on the composite percentage of substandard samples for 1945 as shown in Table V.

Acetic Acid 10%

Apparently pharmacists find it just as difficult to prepare a 10% solution of acetic acid as a 10% solution of hydrochloric acid. Here again they may use U. S. P. acetic acid in the process, and this acid can vary from 36% to 37% of $\text{HC}_2\text{H}_3\text{O}_2$. If the tolerance in this case were changed from $\pm 5\%$ to $\pm 10\%$, the percentage of substandard samples of acetic acid 10% would drop from 47.3% to 28.1%. I recommend such a change.

Phenol Ointments 5% and 3% and Salicylic Acid Ointments 7.5%, 3%, and 2.5%

The high percentage of substandard samples of phenol in petrolatum (46.1%) are not within a tolerance of $\pm 10\%$ is typical of preparations containing phenol. A major factor for the poor showing made with preparations requiring crystalline phenol is the hygroscopic nature of the chemical. This factor could be taken care of by purchasing crystalline phenol in smaller, airtight containers, and keeping the bottle in use in a dry place. Another factor is the small volume of the preparation usually prescribed. The fact that the probability for error varies inversely with the amount of substance being weighed or measured cannot be denied. Undoubtedly the forceful warnings concerning the dangers of handling this substance are a factor in the wide variations shown.

Lythgoe⁸ found that in 92 samples of 5% phenol solutions, 55% varied by more than $\pm 10\%$. He also found that at least one in six samples of liquefied phenol was below official strength.

It is bad enough to have pharmacists use under-strength liquefied phenol in compounding aqueous solutions, but why must some pharmacists use lique-

fied phenol in compounding solutions in oil and in compounding ointments with petrolatum?

The results with the salicylic acid ointment (17.5% are not within a tolerance of $\pm 10\%$) show that much better results can be obtained with more stable and less caustic ingredients.

Chloroform Spirit

Results obtained with chloroform spirit N.F. indicated that the official limits of tolerance might be too severe or the assay procedure might require alteration. Our study of the problem¹¹ resulted in the following changes in the N. F. monograph for this preparation:

1. The rubric statement was changed from a weight-to-volume to a volume-to-volume basis.
2. The tolerance was increased from $\pm 4.2\%$ to from -7.5% to $+5\%$.

TABLE VI—EXTEMPORANEOUS PREPARATIONS, 1945

PREPARATION	NO. OF SAMPLES PURCHASED	NO. OF SAMPLES SUB- STANDARD	PERCENTAGE OF SAMPLES SUB- STANDARD
Acetic Acid 10%	57	27	47.3
Boric Acid Solution N.F.	66	10	15.2
Chloroform Spirit N.F.	14	7	50.0
Dil. Hydrochlor. Ac. U.S.P.	50	19	38.0
Lime Water U.S.P.	82	10	12.2
Lugol's Solution U.S.P.	79	10	12.7
Phenol Ointment (5%, 3%)	39	18	46.1
Potassium Iodide Sol. N.F.	194	55	28.3
Potassium Per- manganate Sol. (3.5%, 3%, 2.5%, 1%)	133	22	16.5
Salicylic Acid Oint- ment (7.5%, 3%, 2.5%)	120	21	17.5
Silver Nitrate Solu- tion 1%	186	33	17.7

- 3 The old assay, which gave consistently low results, was dropped in favor of the recommended procedure.

Based on the tolerance official at the time, 7 of the 14 samples of chloroform spirit purchased in 1945, or 50%, failed to meet the requirements. Based on the tolerance now official this is reduced to 2 samples, or 14.3%, outside the limits. We felt that the new tolerance was sufficiently lenient. In 1946, 40 samples of chloroform spirit were purchased, of which 11 samples, or 27.5%, did not meet the old tolerance. Not one of these substandard samples, 10 of which were low and 1 was high, could meet the new toler-

ance either, and only two of them would fall within a tolerance of $\pm 10\%$. This is not at all heartening.

Potassium Permanganate Solution

The relatively low percentage (16.5%) of samples of potassium permanganate solutions that did not fall within the set tolerance of $\pm 10\%$ is still not too good. Lythgoe⁸ reported results with 17 samples of 5% potassium permanganate solution which showed that 80.8% of the samples did not meet a tolerance of $\pm 10\%$. It appears that Lythgoe's samples were collected by inspectors unknown to the pharmacists. This procedure would very likely cause some increase in the percentage of substandard samples purchased, but our prescription study of solutions indicates that Maryland pharmacists could be expected to do a better job than Lythgoe⁸ revealed by his data.

Silver Nitrate Solution

The 17.7% of 1% silver nitrate solutions which did not meet a tolerance of $\pm 10\%$ is too high a proportion. Lythgoe found that with 20 samples of 2% silver nitrate solution 40% of them did not meet a tolerance of $\pm 10\%$.

Potassium Iodide Solution N. F.

The National Formulary gives directions for preparing this solution. It directs the solution of 100 Gm. of potassium iodide in enough water to make 100 cc. of solution. We usually purchase $\frac{1}{2}$ fl. oz. or 15 cc. of this solution. Weighing 15 Gm. of a very pure and stable salt should be done without much variation. Still we find that 28% of the samples purchased failed to meet the official tolerance of $\pm 3\%$. This is better than the results noted in 1944 when 148 samples of this solution were purchased and 33% of them failed to meet the specified official tolerance.

Boric Acid Solution N. F.

The N. F. directions for preparing this solution should yield a 5% solution. A minimum tolerance of -15% is allowed but no maximum tolerance is given. This allows the preparation of a saturated solution of boric acid which may contain about 5.3% of boric acid at 25° C. Taking only those preparations which fail to meet the minimum requirement of 4.25 Gm. per 100 cc., we found 15% of the samples substandard.

A tabulation made by W. F. Reindollar¹⁰ of the boric acid solution samples tested in 1943 shows that 16% failed to meet the official minimum requirement. It also shows that if a tolerance of $+10\%$ were set as the maximum, the number of samples containing more than 5.5% of boric acid would raise the substandard samples to 26%.

It might be advisable to set a maximum limit of

variation in the case of this solution, because of the tendency of boric acid (even at room temperature) to crystallize from solutions containing more than 5.3 Gm. of boric acid in 100 cc. of solution.

Lime Water U. S. P.

This preparation consistently shows a relatively small number of substandard samples. The 12% bad samples is the lowest percentage for the extemporaneous preparations in Table V. In 1943, when 134 samples of lime water were tested, only 6% failed to meet the U. S. P. requirement. The minimum requirement for this solution is 0.14 Gm. of $\text{Ca}(\text{OH})_2$ in 100 cc. Of the 8 samples classed as unofficial in 1943, three contained over 0.135 Gm. in 100 cc. Counting these as 0.14 Gm., the percentage of bad samples would be 4%. This is getting close to a practically irreducible figure.

Phenacetin Capsules 5 Grains

A number of 5-gr. phenacetin capsules were purchased at different drugstores during 1945. Since no definite standards exist for this type of preparation, they were not included in Table V. Results of the analyses of these samples are given in Table VII. In addition to variation in total weight, the average of the variations for the individual units in each set of 12 capsules, and the variation of the lightest and heaviest capsules from the theoretical mean, there are listed the number of capsules in each set which exceed tolerances of $\pm 10\%$, $\pm 15\%$, and $\pm 20\%$.

Of the 31 sets of capsules studied, 7 sets (23%) exceeded a tolerance of $\pm 5\%$ for the net weight of the combined capsule contents. In the average unit variation, eight sets (26%) exceeded a tolerance of $\pm 5\%$; 5 sets (16%) exceeded a tolerance of $\pm 7.5\%$; and 4 sets (13%) exceeded a tolerance of $\pm 10\%$. Eleven sets (36%) had one or more capsules which exceeded a tolerance of $\pm 10\%$; 4 sets (13%) had capsules which exceeded a tolerance of $\pm 15\%$; and 2 sets (6%) had capsules which exceeded a tolerance of $\pm 20\%$.

Examination of 25 sets of 5-gr. aspirin capsules showed values very similar to those for phenacetin capsules. Twenty-two sets of 5-gr. quinine capsules showed wider variations, especially in the individual unit variations. Seven sets (32%) had one or more capsules outside a tolerance of $\pm 10\%$; capsules in 5 sets (32%) were outside a $\pm 15\%$ tolerance; and capsules in 3 sets (14%) were outside a $\pm 20\%$ tolerance.

We must note that the figures for substandard samples given in Table V (second column) include manufacturers' as well as pharmacists' preparations. The advantage of having pharmaceuticals prepared by manufacturing pharmacists who have proper means of controlling and testing their products is emphasized by the fact that a very small percentage of the manufacturers'

TABLE VII—VARIATIONS IN 5-GRAIN PHENACETIN CAPSULES

SAMPLE NO.	VARIATION IN TOTAL WEIGHT IN %	AVERAGE UNIT VARIATION IN \pm %	MAXIMA UNIT VARIATION IN %	No. CAPS. OUTSIDE TOLERANCE OF $\pm 10\%$	No. CAPS. OUTSIDE TOLERANCE OF $\pm 15\%$	No. CAPS. OUTSIDE TOLERANCE OF $\pm 20\%$
45-217	-6.5	5.4	-17.2 +1.2	1	1	0
45-218	+1.2	1.9	-1.2 +4.0	0	0	0
45-219	+15.8	15.9	+10.3 +18.4	12	8	0
45-220*	-14.0	13.8	-25.4 -5.6	8	4	3
45-221	-1.2	2.6	-7.0 +3.4	0	0	0
45-222*	+2.2	2.7	-2.2 +7.4	0	0	0
45-223	-1.8	2.2	-4.6 +2.0	0	0	0
45-224	-5.7	6.3	-11.8 +3.2	2	0	0
45-225	-8.3	8.4	-12.0 -5.0	4	0	0
45-226	-3.0	3.4	-8.6 +1.6	0	0	0
45-227	-1.5	3.4	-7.4 +6.4	0	0	0
45-228†	-3.3	3.3	-10.4 0.0	1	0	0
45-229	+0.2	2.7	-7.4 +4.4	0	0	0
45-230	+1.0	1.8	-1.6 +4.4	0	0	0
45-231	-2.3	3.1	-9.2 +2.8	0	0	0
45-232	-1.7	3.1	-7.0 +2.8	0	0	0
45-233	+9.3	10.3	-5.8 +13.6	8	0	0
45-234	-2.3	2.6	-4.0 +1.6	0	0	0
45-235	+2.5	10.7	-12.0 +29.6	5	3	1
45-236	+1.5	2.1	-5.8 +1.8	0	0	0
45-237	+0.2	0.8	-2.2 +2.8	0	0	0
45-238	+4.2	4.6	-2.4 +10.0	0	0	0
45-239	-2.0	2.4	-5.0 +0.8	0	0	0
45-348	-1.8	3.1	-10.2 +2.8	1	0	0
45-349	-6.2	6.6	-13.0 +2.4	3	0	0
45-350	+1.7	1.9	-0.6 +5.2	0	0	0
45-351	+1.3	1.4	-2.4 +6.2	0	0	0
45-352	+3.5	1.9	0.0 +6.0	0	0	0
45-353	+2.0	4.7	-12.4 +9.6	1	0	0
45-354	-0.8	3.0	-6.4 +5.6	0	0	0
45-355	-1.0	2.2	-6.4 +3.2	0	0	0

* Eleven capsules in the set † Six capsules in the set

samples are found to be unacceptable. Our data for the year 1945 show that 3% of all the manufacturers' samples were substandard, while 28% of the extemporaneous samples were outside the accepted tolerances.

Discussion

Lythgoe⁸ states that the reasons for the wide variations among preparations compounded by pharmacists include "incompetency, inaccuracy, fraudulency, and inattention to business." His studies entitle him to assail the competency and accuracy of some pharmacists. His charge of fraudulency certainly applies to such a small number of cases that it is not only wrong but it is unfair to include it as a reason for inaccurate compounding. His charge of inattention to business undoubtedly applies to the compounding portion of the "drug business," and unfortunately he has grounds for his charge.

Faulty arithmetical conversions also account for many inaccuracies. In spite of this, some

pharmacists will insist on making these conversions rather than acquire metric weights and glassware graduated in metric units or rather than use them when they are forced to possess them. The U. S. P. and N. F. are stressing the use of the metric system and the medical schools are teaching the use of the metric system in prescription writing. It is essential that pharmacists should be equipped with the proper tools, especially if they are arithmetically weak.

There is still another reason for compounding inaccuracies, and it is largely psychological. It is a case of the pharmacist knowing too much for his own accuracy. With the great majority of medicinal agents, the accepted dosage is not based on scientifically proved facts. Take our old friend diluted hydrochloric acid. The pharmacist has seen its official average dose change from 1 cc. (U. S. P. X), to 2 cc. (U. S. P. XI), to 4 cc. (U. S. P. XII).

In the case of liquid preparations, the pharmacist knows that no matter how accurately the preparation is made the directions for administra-

tion allow for wide variations in the dosage. Most of these medicinals are administered by the teaspoonful, and the fact that a teaspoonful can vary from 3 cc. to 5 cc. is generally understood. The wide variations in the drops delivered by the many types of medicine droppers, and the influence of viscosity and surface tension on the size of the drop are recognized. With preparations in capsule and powder form, some pharmacists illogically argue that the prepared medicine is not expected to cure in one dose, and that the physiological effects of the active agents are obtained with a number of doses whose average is close to the prescribed unit dose. These reasons for the carelessness in compounding in no way excuse this attitude, which is one of the main causes of inaccurate compounding.

There are some causes for what are reported as substandard samples that are unfairly accredited to inaccurate compounding, and these factors should be taken into consideration in setting the tolerances for different preparations. The more liberal tolerance for chloroform spirit has been cited, and recommendations for a tolerance of $\pm 10\%$ for solutions like 10% hydrochloric and acetic acids have been given.

The following tolerances, based on the present and other studies, are recommended for prescriptions for capsules and powders:

1. The combined determined weights of the prescribed ingredients (weight of the combined unit contents if no other ingredient is added) should not vary more than $\pm 10\%$ from the total prescribed weight.

2. The average variation in the weights of the contents of the individual units should not be more than $\pm 10\%$ from the theoretical weight per unit (or from the average unit weight if another ingredient, e.g., lactose, is added), and no single unit should vary more than $\pm 15\%$.

3. The total weight of each prescribed ingredient in the combined contents of all the individual units should not vary more than $\pm 15\%$ from the prescribed weight.

NOTE: Determinations should be based on the contents of at least ten capsules or powders.

The need for regulatory standards in pharmaceutical compounding is obvious; and the necessity of educating pharmacists to try to comply with reasonable standards is self-evident. It may be argued that any study based on prescriptions obtained by law-enforcement bodies would tend to paint an especially dark picture of

pharmaceutical accuracy. Because of limitations of funds and qualified inspectors it is only natural that prescriptions, in many instances, should be taken to drugstores where routine checks have cast suspicion upon the accuracy of their products. But this does not hold for studies of extemporaneous preparations which are purchased at every drugstore in the state.

On the whole, it appears that a greater degree of accuracy is achieved in the compounding of liquid preparations than with other types of medicinal preparations, especially where the dissolved ingredients are stable and easily handled, or are expensive, or toxic, or must be accounted for to some authority as with codeine.

Liberalizing tolerances where this is advisable will not lower the percentage of unacceptable compounded preparations to a satisfactory level. Pharmacy has leaders who strive to raise the standards of pharmaceutical education, and to educate the public to think of pharmacy as a scientific profession. If pharmacy is to have the backing of public health authorities in advancing their professional claim, something should be done to increase the accuracy of pharmaceutical compounding.

Summary

1. Studies of variations in the compounding of prescriptions and other extemporaneous preparations in drugstores are presented.
2. The various factors which influence accuracy in compounding are discussed.
3. The relative precision with which pharmaceuticals are prepared by drug manufacturers and retail pharmacists is indicated.
4. The influence of certain extemporaneous preparations on the over-all picture of compounding accuracy is shown.
5. Allowable tolerances are discussed and changes in some accepted tolerances are suggested.
6. Tolerances for capsules and powders compounded in the drugstore are offered for consideration.
7. The necessity for increased precision in drugstore compounding is indicated.

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Science News Capsules

"H" LACTATION-PROMOTING factor was described at the Eleventh International Congress of Pure and Applied Chemistry in London by Dr. Mohamed El Shahat of Cairo, Egypt. Small doses of this chemical, obtained from fenugreek oil, were reported to increase the volume of milk from human mothers by 160% to 900% in 158 cases. There was also an increase in the nutritional constituents of the milk.

THE DEATH RATE in the U. S. may reach a new low in 1947, according to statisticians of the Metropolitan Life Insurance Co. For the first six months of this year the death rate was 7.6 per 1000 policyholders, which is identical with the previous low in mortality registered in 1942. Tuberculosis deaths are down 8% below the previous minimum, and 35% below the rate ten years ago. In four out of the six months there was not a single death from scarlet fever in the insured group, which includes several million children. The death rate of less than 1.5 per 100,000 for scarlet fever, measles, whooping cough and diphtheria taken together was called "almost incredible but true." The decline in syphilis mortality has amounted to almost 30% in the past ten years, and appendicitis mortality is down more than 70%.

RADIOACTIVE BACTERIA and radioactive penicillin have been prepared at the National Institute of Health by introducing radioisotopes into the media upon which the bacteria and the penicillium grow. The radioactive bacteria are being used in studies that may elucidate immune mechanisms. Radiopenicillin is being used to obtain further information on penicillin blood levels and the fate of the drug in the body.

TEPEXPAN MAN, the 10,000- to 15,000-year-old fossil skeleton found in Mexico a few months ago, has arrived in this country for study by Mexican and United States scientists at the U. S. National Museum. Tepexpan Man was found at what was once the marshy edge of a lake, where he probably hunted elephants at the time the Ice Age was ending in North America. His bones were found close to the skeleton of an imperial elephant, largest of the ancient mammoths. Although possibly the earliest known North American, Tepexpan Man is relatively "modern," differing particularly from the Neanderthal type by a sharply prominent chin.

ATOMIC RESEARCH has advanced far beyond the knowledge from which the atomic bomb was fashioned. One indication of this is a report made to the American Physical Society's Pacific Coast Sec-

tion. The new 4000-ton cyclotron at the University of California has knocked 22 and possibly is many as 30 particles out of atomic nuclei, transmuted common elements sixteen steps down the periodic table, and opened to study an entirely new series of one hundred or more radioisotopes lighter than stable isotopes.

SYNHEXYL, also known as parahexyl, is a new euphoriant that shows promise for treating depression states in the mentally ill. When given orally to 50 patients, the drug produced definite improvement in 36 and no marked side effects were observed. They felt more cheerful, confident and showed more initiative, reports Dr. G. T. Stockings, a Hart Memorial Scholar of the British Medical Association. Dr. Victor Vogel of the U. S. Public Health Service has expressed a less optimistic view, pointing out that the drug produces an acute psychotic excitation in some patients and that the hazards of giving it to unstable patients may outweigh its advantages. Synhexyl was first synthesized in the U. S. by Prof. Roger Adams at the University of Illinois.

CHLORDANE, a new insecticide, is said to be about four times as potent as DDT against certain insects. Laboratory tests are reported to show that it is particularly effective against such household pests as roaches, ants, moths and carpet beetles, and against the hordes of grasshoppers that invade Western farm lands. The insecticide is both a stomach and contact poison. Chemically, it is octachloro - 4,7 - methano - tetrahydroindane, which will be marketed in various forms and grades under the trade name Synklor (U. S. Rubber Co.)

GLYCERIN PRODUCTION reached an all-time high of 69,000,000 pounds during the first four months of 1947, according to the Glycerin Producers Association. This represents an increase of almost 25% over the same period last year.

BENZENE HEXACHLORIDE ("666") may be a sufficiently effective insecticide for flies and mosquitoes so that it will eventually replace DDT and pyrethrum in aerosol bombs, according to U. S. Department of Agriculture entomologists. A drawback of "666" is its persistent disagreeable odor, but it is believed this may be eliminated by improvements in manufacturing processes. Detailed studies of its toxicity to warm-blooded animals also remain to be carried out.

WORLD'S WORST WORRIERS appear to be the Aymara Indians, who live on a 14,000-foot-high

plateau in the Andes. Life is hard in the bleak, barren Aymara country, and their hardships seem to be reflected in the mental attitude of the people. Anthropologist Jarro Tschopik, Jr., who has just returned to the U. S. after living in one of their villages for seven years, reports that the Aymaras appear not to like anybody, worry constantly, and practice witchcraft.

ELECTRO-NARCOSIS is being evaluated as a much simpler treatment for schizophrenia than insulin shock, which is now the treatment of choice. The technique involves a brief electrical shock, producing convulsions, followed by a weak electrical current passed through the brain to induce a deep, dream-like, seven-minute sleep. In the second group of schizophrenic patients thus treated, Dr. Karl Bowman and Dr. Alexander Simon of the University of California Medical School reported that 5 out of 31 patients recovered.

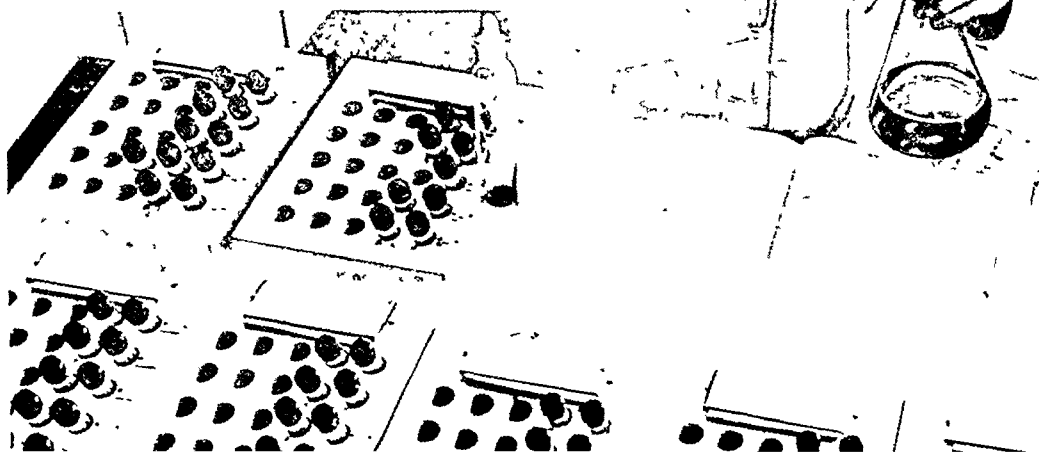
A MILLION MORE BABIES were born last year in the U. S. than would have come into the world had the 1933 birth rate continued. The total gain in babies for the country since 1933—over the 1933 birth rate—is four million, according to statisticians of the Metropolitan Life Insurance Co.

STREPTOMYCIN samples are prepared for testing (below) at the Merck manufacturing laboratory in Elkton, Va. The control procedure follows each step in production of the highly purified calcium chloride complex of streptomycin, which recently has become generally available from this laboratory. This form of the drug is said to reduce pain markedly upon injection, as compared with salts previously available. Clinical studies also indicate that streptomycin in highly purified forms—now being produced in various laboratories—induces sufficiently few reactions to justify long-continued administration. Thus the drug will be prescribed more often in actively progressing tuberculosis and comparably serious infections; but competent clinicians are cautioning against use of streptomycin in relatively benign infections until more is learned about possible late untoward effects.

RADAR has potential value in medicine as an improvement over shortwave diathermy, clinicians at the Mayo Foundation believe. This same type of radiation was under investigation some years before the development of wartime "radar," but was then known as microwave therapy. It has the advantage of a localized beam and permits more rapid cooling of the skin, since the patient is freed from pads.

WILL IT BE A BOY? This question may be answered with a fair degree of accuracy for the expectant mother through two new tests developed at the University of Georgia School of Medicine. A blood test is based on the ratio between the "FSH" hormone and "LH" hormone secreted by the pituitary gland. A second test is based on a histologic study of cells shed by the tissues lining the uterus; when these cells fall into definite types, sex of the fetus can be determined with 85.4% accuracy.

A LIVING MUSEUM has been found by Smithsonian Institution anthropologists in the small village of Moche on the coast of Peru. Here life goes on much as it did a thousand years ago, with a culture much older than the Spanish Conquest. Moche is touched by the new Pan American highway, and scientists expect to observe here the process of a new culture in rapid development.



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KUMMERFELD'S LOTION

Kindly advise us of the formula for Kummerfeld's lotion or where it may be obtained.—C. J., New Jersey

The formulas for this preparation appear in *Pharmaceutical Recipe Book III*, published by the AMERICAN PHARMACEUTICAL ASSOCIATION:

KUMMERFELD'S LOTION

Kummerfeld's Cosmetic Water

I

Spirit of camphor.....	100 cc.
Alcohol.....	100 cc.
Tragacanth, ribbon.....	15 Gm.
Precipitated sulfur.....	60 Gm.
Water, a sufficient quantity,	
To make.....	1000 cc.

Mix the spirit of camphor with the alcohol. Macerate the tragacanth in 500 cc. of distilled water until thoroughly softened and suspend the sulfur in the product by trituration. Mix the two liquids, and finally add sufficient water to make the product measure 1000 cc.

II

(Hager)

Precipitated sulfur.....	40	Gm.
Camphor.....	3.33	Gm.
Acacia, in fine powder.....	6.66	Gm.
Solution of calcium hydroxide.....	500	cc.
Water or rose water, a sufficient quantity,		
To make.....	1000	cc.

Triturate the solid ingredients until intimately mixed, using a few drops of alcohol to insure pulverization of the camphor, and incorporate with the solution of calcium hydroxide. Add sufficient rose water to make the product measure 1000 cc.

PREPARATION OF UNDECYLENATE

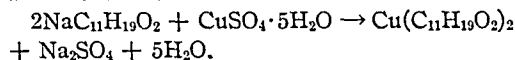
Would you please let me know how to make copper undecylenate?—I. L., Montreal

Pure undecylenic acid is an unsaturated fatty acid having the formula $\text{CH}_3\text{CHCH}(\text{CH}_2)_9\text{COOH}$. The commercial product is seldom strictly pure but, like oleic and stearic acids, a mixture. The most accurate way to make copper undecylenate, therefore, is to determine first the acid value of the undecylenic acid to be used. Then, to a convenient weight of undecylenic acid add about ten times this quantity of water and heat on a water bath. Add, in divided portions, the calculated weight of sodium carbonate to neutralize the acid, and continue heating until saponification is complete. From the weight of sodium undecylenate that would thus be formed, determine the amount of copper sulfate that would be required to convert the sodium salt to the cupric salt. Dissolve that amount of copper sulfate in a convenient volume of water and add slowly to the sodium undecylenate solution. A curd of copper undecylenate will form, which is filtered off, washed well with hot water, then dried at 100° and powdered.

We have prepared this compound in the laboratory by a slightly different and less accurate

method. Assume the undecylenic acid to be chemically pure. The neutralization reaction can then be stoichiometrically written as: $\text{Na}_2\text{CO}_3 + 2\text{HC}_{11}\text{H}_{19}\text{O}_2 \rightarrow 2\text{NaC}_{11}\text{H}_{19}\text{O}_2 + \text{H}_2\text{O} + \text{CO}_2$. By simple proportion 25 Gm. of undecylenic acid would require about 7.2 Gm. anhydrous sodium carbonate for neutralization. Twenty-five grams of undecylenic acid and 250 cc. of water were heated together and neutralized with 7 Gm. of sodium carbonate; 1 cc. of the resulting solution was added to 5 cc. of water and a drop of phenolphthalein added. The solution remained colorless. Small amounts of sodium carbonate were added with continued heating and stirring until the solution, when tested in this manner with phenolphthalein, gave a very faint pink color.

The amount of copper sulfate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) required to react with the sodium undecylenate was then calculated, based on the following equation from which the purity of sodium undecylenate is assumed:



Again going back to the 25 Gm. sample of undecylenic acid, 16.9 Gm. of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is required.

The copper salt is filtered, washed and dried as mentioned above.

INSTRUMENT STERILIZATION

Will you please submit a formula for cold sterilization of instruments? The physician that requests such a solution has used one in the hospital known as Bard-Parker's solution.—E. K., Missouri

Bard-Parker's Solution has been widely used for the chemical disinfection of instruments, but there appears to be a tendency to vary the composition depending upon the desires of the user.

One of the early formulas is given below:

Formaldehyde.....	3%
Alcohol.....	77%
Acetone.....	10%
Inert ingredients (mostly water).....	10%

A more recent formula is said to be as follows:

Isopropyl alcohol.....	48.12%
Methyl alcohol.....	3.08%
Formaldehyde.....	8.00%
3,9 - Diethyltridecanol - 6 sodium sulfate.....	0.187%
Inactive ingredients (water, etc.)..	40.62%

This later solution is apparently more effective due to addition of the wetting agent.

TRIMETHADIONE

Can you supply the name of the manufacturer of the chemical trimethadione, used in treating epilepsy?—E. B., West Virginia

Trimethadione is the name assigned an anti-convulsant drug which chemically is 3,5,5-trimethyloxazolidine-2,3-dione. This product is manufactured and distributed exclusively by Abbott Laboratories, North Chicago, Ill., in the form of capsules and in a flavored aqueous solution. Their copyright name for the drug is Tridione.

FORMULA FOR HAND CREAM

Do you have a formula for a hand cream for dry skin, perhaps one containing wool fat?—H. M., Colorado

The following formula taken from the *Pharmaceutical Recipe Book III*, a publication of this ASSOCIATION, should fill your need:

White wax.....	114 Gm.
Spermaceti.....	85 Gm.
Hydrous wool fat.....	156 Gm.
Expressed oil of almond or per- sic oil.....	463.5 Gm.
Rose water.....	175 cc.
Sodium borate.....	2.5 Gm.
Antioxidant, if desired	
Perfume, as desired	

To make about..... 1000 Gm.

Melt the white wax and spermaceti (with the antioxidant) on a water bath, add the expressed oil of almond and warm to 70° C. Dissolve the sodium borate in the rose water and bring to the same temperature as the melted mixture, to which it is added gradually with constant stirring. Pour into a slightly warmed mortar containing the wool fat and stir. Add the perfume and stir until cold.

The hydrous wool fat may be replaced by theobroma oil, if desired.

A STABILITY PROBLEM

I am interested in compounding a solution of sodium sulfadiazine with sodium bicarbonate suitable for internal use for adults but chiefly for children. Physicians in my city are prescribing sulfadiazine in a thick preparation. If both the dispenser and the patient do not thoroughly

shake this type of preparation the sulfadiazine will settle out and when the latter doses are taken the patient, especially a child, could suffer toxic effects.—B. D., Connecticut

It is generally conceded that solutions of sodium sulfadiazine are less stable than sulfadiazine itself. The following preparation, developed by Chiba and Phillips (*Bull. Amer. Soc. Hosp. Pharm.*, 3 : 22, 1946), we believe would be suitable for your purpose. This contains sulfadiazine powder suspended in an aqueous solvent, but it also contains a relatively large amount of sodium citrate that would have an alkalizing effect on the urine similar to sodium bicarbonate.

Sulfadiazine powder.....	62.5	Gm.
Pectin.....	7	Gm.
Sodium citrate.....	75	Gm.
Benzaldehyde.....	0.2	cc.
Zephiran chloride solution, 12.5%.....	1	cc.
Syrup.....	500	cc.
Orange flower water.....	200	cc.
Distilled water, q. s.....	1000	cc.

Rub the pectin with a small amount of the syrup; add remainder of the syrup and then add remainder of the ingredients, having dissolved the sodium citrate in the orange flower water. Mix well and pass through a homogenizer.

NOMINATIONS FOR IODINE RESEARCH AWARD OPEN UNTIL JANUARY 1

NOMINATIONS are now being received by the AMERICAN PHARMACEUTICAL ASSOCIATION for the Iodine Educational Bureau Award recognizing outstanding research in the chemistry and pharmacy of iodine and its compounds as applied in pharmacy or medicine. Any member of the ASSOCIATION may propose a nominee by submitting specific identification of the work to be considered in the competition, a biographical sketch of the nominee including date of birth, and a list of his publications. Eight copies of the nomination must be submitted to the Secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, Dr. Robert P. Fischelis, 2215 Constitution Ave., N. W., Washington 7, D. C. To be eligible for the 1948 award, nominations must be received before January 1.

Establishment of the new iodine award was announced at the Milwaukee convention of the AMERICAN PHARMACEUTICAL ASSOCIATION, which will administer the competition.

A nominee must be a resident of the United States or Canada. He must have accomplished outstanding research in the chemistry or pharmacy of iodine and its compounds as applied in pharmacy or medicine, including diagnostic use.

During the period covered by the nomination the nominee shall have been actively engaged in, shall have completed, or shall have published a report upon the line of investigation for which the award is made. During the two years prior to nomination, a nominee shall not have been engaged in research under sponsorship of the Iodine Educational Bureau, Inc.

The award consists of \$1000 and a diploma setting forth the reasons for selection of the recipient. It may be presented biennially at the annual meeting of the ASSOCIATION.

The recipient will deliver a paper or lecture upon the subject of his scientific work at the meeting at which the award is conferred. His paper, or address, will then be published in the JOURNAL of the ASSOCIATION. In addition to the sum of the award, the recipient will receive an allowance of not more than \$250 to defray expenses of attending the meeting.

The recipient will be selected by an award committee, which is appointed by the chairman of the ASSOCIATION'S Council and which functions under prescribed rules. Should the award committee fail to find a suitable recipient in any biennium, two awards may be made during the next biennium in the same or successive years, if suitable recipients are selected.

CIBA ANNOUNCEMENT TO PHARMACISTS

PYRIBENZAMINE

Ointment and Cream



List Prices

PYRIBENZAMINE OINTMENT 2%

PETROLATUM BASE

Jars, 50 Gm. . . Dozen \$12.00
Jars, 1 lb. . . . Each \$ 6.00

PYRIBENZAMINE CREAM 2%

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Jars, 50 Gm. . . Dozen \$12.00
Jars, 1 lb. . . . Each \$ 6.00

PYRIBENZAMINE (brand of triphenylamine) T.M. Reg. U. S. Pat. Off.

Pyribenzamine hydrochloride is now incorporated in two topical forms. These new preparations have been found useful in pruritus ani; various types of dermatitis, and other conditions associated with itching.*

Both these products contain 2 per cent Pyribenzamine, the Ciba antihistaminic which has been highly successful in controlling allergic symptoms incident to hay fever and asthma, as well as many dermatologic diseases. Orders for these new Pyribenzamine products placed through your regular source of supply will be shipped promptly.

*Feinberg and Bernstein, J.A.M.A. 131: 874 (July 5) 1947

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A SUSPENSION OF PARALDEHYDE

by CARL C. PFEIFFER and HARRY L. WILLIAMS

DEPARTMENT OF PHARMACOLOGY, UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, CHICAGO 12

ALTHOUGH paraldehyde is an effective hypnotic drug its unpleasant taste and odor make intragastric instillation, via a stomach tube, almost the only acceptable route of administration. Most confusing to the critical observer are the directions in books of pharmacology¹ and therapeutics² which advise giving paraldehyde on chipped ice. Since the drug congeals at 11° C.³ almost the entire dose remains as a coating on the ice chips when the diluting water or milk is added. The solubility of the liquid is one part in eight parts of water at 25° C., but the rate of solution of the congealed material in ice water is apparently very slow. The reliability and extremely low toxicity of oral paraldehyde would well justify the time and effort spent in preparing more palatable preparations.

Experimental

A suitable suspension of paraldehyde in water may be made by the use of powdered gum tragacanth. Such suspensions can be made to contain as high as 50% (by volume) of paraldehyde and are stable over a period of at least one year when stored in brown bottles at room temperature.

Dilution of the suspension with tap water or ice water (as at the time of administration) does not result in any detectable separation of the suspended medicament. When two or three teaspoonfuls of the suspension are diluted in a glass or one-half glass of water, the effect on the mucous membranes of the mouth and oro-pharynx is strikingly similar to that of menthol, namely, a mixed sensation of mild heat and coldness. This suspension has been tested on patients in the Illinois Neuropsychiatric Hospital and has been found quite palatable.

Powdered gum acacia will not, under these same conditions, suspend paraldehyde.

Preparation

To 200 cc. of paraldehyde in an electrically operated blender* 10 Gm. of powdered gum tragacanth is slowly added while the motor is

GUM TRAGACANTH AND GLYCYRRHIZA SYRUP OFFER A MORE PALATABLE PREPARATION OF HYPNOTIC KNOWN FOR UNPLEASANT TASTE AND ODOR

run either at slow speed or intermittently (to prevent splashing). When the tragacanth is thoroughly suspended, 300 cc. of water is added rapidly while the blender is operating at high speed. When all of the paraldehyde is suspended and no traces of oily liquid remain on top of the suspension, the process is complete.

At this point glycyrrhiza fluidextract or anise oil may be added as a flavoring agent. Cinnamon and peppermint oil are also effective flavoring agents but they tend slightly to break the suspension.

Since the demulcent action of glycyrrhiza masks the taste most successfully, an alternate and apparently equally satisfactory method of preparing the suspension is to use 300 cc. of glycyrrhiza syrup instead of the water in the second step of the process. When the syrup is used the amount of tragacanth can be reduced to as low as 1.5% since the emulsifying action of the glycyrrhiza apparently substitutes to some extent. On long standing, however, this separates into two layers and a "shake label" is needed.

This could be prescribed as follows:

R _x	Gm. or cc.
Paraldehyde USP.....	50
Pwd. gum tragacanth.....	2
Glycyrrhiza syrup, <i>q.s.ad</i>	120

Make a suspension.

Label: Shake before using. One teaspoonful in ice water as needed for insomnia.

When the preparation is stained with the fat-soluble dye, Sudan III, and examined under the microscope some of the globules of paraldehyde take this fat-soluble stain. The suspended red globules apparently indicate an emulsion or suspension of paraldehyde in water.

* Waring-Type Blender.

The use of an homogenizer to further subdivide the suspension was unsuccessful, in that the suspension was partially separated by this process.

Since this suspension contains about 40% paraldehyde, 5 cc. or one teaspoonful will provide the 2 cc. U. S. P. dose of paraldehyde.

We have had no experience as yet with rectal administration of the suspension but it is believed that retention of this preparation should be better and the pathological effect on the mucous membrane decreased from that produced by undiluted paraldehyde.

Other diluted preparations of paraldehyde available are an elixir of paraldehyde, R. B. III,⁴ which contains 24% paraldehyde, 50% alcohol and approximately 25% glycerin, and a mixture of paraldehyde, R. B. II.⁵ While these preparations are probably palatable if well diluted, the high concentration of organic solvents in the former is not desirable in the treatment of al-

coholics and epileptic patients, and the mixture of paraldehyde is much too dilute for use in adults.

Summary

Paraldehyde may be suspended in water by the use of 2% of powdered gum tragacanth. Glycyrrhiza syrup is the best masking agent for the menthol-like taste of this suspension, which is more palatable than paraldehyde diluted with ice water. With a 40% suspension the U. S. P. dose of paraldehyde (2 cc.) is contained in one teaspoonful (5 cc.).

REFERENCES

1. Goodman and Gilman, "The Pharmacological Basis of Therapeutics," Macmillan, New York, 1941, p. 179.
2. Beckman, "Treatment in General Practice," ed. 3, Saunders, Philadelphia, 1940, p. 608.
3. "U. S. Pharmacopœia XIII," Mack Printing Co., Easton, Pa., 1947, p. 378.
4. "The Pharmaceutical Recipe Book," ed. 3, AMERICAN PHARMACEUTICAL ASSOCIATION, 1943, p. 33.
5. "The Pharmaceutical Recipe Book," ed. 2, AMERICAN PHARMACEUTICAL ASSOCIATION, 1936, p. 121.

CINCHONA REGULATIONS FURTHER MODIFIED

REMAINING government controls over cinchona and its alkaloids are further modified by amendment to order M-131, issued by the Office of Materials Distribution on September 12. The effects of the revised regulations, as they apply to the practicing pharmacist, are outlined below:

1. **QUINIDINE.**—Controls over acquisition and dispensing by the practicing pharmacist remain the same *except* that to obtain quinidine from a supplier it is no longer necessary to submit a certification for each order. Although the certificate is not required the following restrictions remain fully in force: (a) No more than two ounces of quinidine or its salts may be obtained during any calendar month without special authorization. (b) At no time may a pharmacist accept delivery of more quinidine than will give him a total stock of four ounces (or its equivalent in standard dosage forms). (c) Quinidine may be dispensed only upon new prescriptions for not more than 50 three-grain capsules or tablets (or the equivalent of 150 grains in other dosage form). (d) The physician must indicate on the prescription that it is intended for cardiac disorders or is prescribed pursuant to order M-131.

Present restrictions apply only to cinchona bark, quinine and quinidine originating from government stocks and not to privately imported

supplies. Because of the nature of remaining restrictions, the source will not ordinarily be in doubt except possibly in the case of quinidine. According to the regulations, pharmacists "obtaining quinidine thought to be privately imported should satisfy themselves, in some reasonable manner, that it was not acquired directly or indirectly from any U. S. Government agency.

"For this purpose, they may rely upon statements in package labelings or upon other written statements from suppliers regarding the source of the quinidine, unless they know or have reason to believe the statements are not true. In general, private imports of quinidine were not resumed until after July 15, 1947. Therefore, quinidine obtained or packaged before that date is likely to have been acquired from government stocks."

2. **QUININE.**—All restrictions on quinine at the level of the retail pharmacy have been removed, both with regard to monthly deliveries and dispensing. Manufacturing pharmacists and others may accept delivery of quinine from the RFC stockpile only as authorized by the Office of Materials Distribution.

3. **TOTAQUINE, CINCHONINE AND CINCHONIDINE.**—All controls over these cinchona derivatives were lifted in November, 1946.

NNR

PRODUCTS RECENTLY ACCEPTED BY THE
A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY

CONTRACEPTIVE CAPSULES AND SUPPOSITORIES (See New and Nonofficial Remedies, 1946, p. 359).

The following article now stands accepted:
EATON LABORATORIES, NORWICH, N. Y.

Lorophyn Vaginal Suppositories: Suppositories consist of a low melting mass prepared from the formula:

Phenylmercuric acetate.....	0.05%
Glyceryl mono-laurate.....	10.00%
Tween 61 (Sorbitan monostearate-hydroxy polyoxyethylene ether).....	89.95%

Actions and Uses.—See article Contraceptive Capsules and Suppositories.

Dosage.—One suppository containing 2.85 Gm.

ESTROGENIC SUBSTANCES (See New and Nonofficial Remedies, 1946, p. 443).

The following dosage forms have been accepted:
ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Tablets Estromone: 1000 international units, 2000 international units and 4000 international units.

Solution Estromone (in Oil): 1-cc. ampuls and 10-cc. and 25-cc. vials. Each cubic centimeter contains 2000 international units, 5000 international units, 10,000 international units or 20,000 international units of estrogenic substances in sesame oil. The 10-cc. and 25-cc. vials contain 0.5 per cent chlorobutanol as preservative.

U. S. trademark 345,724.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1946, p. 618).

The following dosage forms have been accepted:
E. S. MILLER LABORATORIES, INC., LOS ANGELES

Solution Thiamine Hydrochloride 10 mg. per cc.: 1-cc. ampuls.

Solution Thiamine Hydrochloride 50 mg. per cc.: 1-cc. ampuls.

BACTERIAL VACCINE MADE FROM PLAGUE BACILLI (See New and Nonofficial Remedies, 1946, p. 577).

The following dosage form has been accepted:
CUTTER LABORATORIES, BERKELEY, CALIF.

Plague Vaccine: 20-cc. vials containing 2000 million killed bacilli.

COUNCIL REPORTS

The Council authorized the publication of a report [J. A. M. A., 133: 693, 1947, and This Journal, 8: 226, 1947] advising against the clinical use of sodium tetrathionate because of the potential dangers of nephrotoxic actions as revealed in animals. Dr. Frank V. Theis takes exception to this caution, believing that there is no danger with clinical doses. Dr. Geza de

Takats also has protested against the report. The Council believes that these letters should be published. They are reproduced here.—AUSTIN SMITH, M.D., Secretary.

SUPPLEMENTAL REPORT ON SODIUM TETRATHIONATE

Dr. Austin Smith, Secretary
Council on Pharmacy and Chemistry
535 N. Dearborn Street
Chicago 10, Illinois

Dear Doctor Smith:

I am concerned by the action of your committee in officially advising, in the March 8 issue of the Journal, that the "use of Tetrathionate in medicine should be abandoned" because of its nephrotoxic effect. To abandon the use of Tetrathionate, on the "substantial evidence" you present, would deprive many patients suffering with thromboangiitis obliterans, thrombophlebitis and other related diseases of intravascular clotting from what are believed to be the benefits of its use. Your conclusion is based on the results of a limited study with relatively large doses of the drug given experimental animals. It overlooks completely the clinical investigations and successful use of Tetrathionate as a therapeutic agent. I know of no report of toxic effect from the clinical use of Tetrathionate.

In 1936 Freeland and I were responsible for having Tetrathionate (Searle) prepared and made commercially available. I have used or supervised the use of more than 15,000 ampuls of Tetrathionate supplied to me by G. D. Searle and Company and have been satisfied with the results in treating more than 500 patients. Confirming our observations de Takats (*Surgery*, 14:661 [Nov]. 1943) stated that the "inexpensive and nontoxic sodium tetrathionate is now in routine use on our (his) surgical service" and that "clinically there can be no doubt about the beneficial influence of intravenous sulfur compounds especially in migrating phlebitis"; and "in the acute stages of Buerger's disease the intravenous use of sulfur has given surprising results." Allen, Barker and Hines in their recent book state that to their knowledge "no untoward reactions have followed the administration of sodium tetrathionate." It may be that the Council carrying the weight and responsibility that it does to the medical profession will wish to review its opinion in the light of further evidence on the clinical investigations with sodium tetrathionate as well as interpret the results of animal studies with the therapeutic doses used in clinical medicine. These doses have not been toxic.

The nephrotoxic effects of Tetrathionate which are cited followed the administration of relatively huge doses to experimental animals. For the dog, Chen, Rose and Clows reported the lethal dose as being 1.0 Gm. per kilogram body weight or 140 times the therapeutic clinical dose, while Gilman determined the dose to be 250 mg. per kilogram or

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300,000 units per cc., vials of 5 and 10 cc.,
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36 times the clinical dose. Gilman's statement that "Tetrathionate is toxic to the renal tubule to a degree that moderate doses produce complete anuria within less than an hour" may be questioned from the data he presented. The "moderate doses" he used were excessively large (i.e., 11.0 Gm. in a single injection to a dog produced anuria in seventy-five minutes) and were toxic doses compared to our recommended clinical dose of 0.4 or 0.6 Gm. for an adult weighing over 70 kilograms. His report showed that with 7 times the human dose given rabbits and 16 times the human dose given dogs none of the animals died and there were no demonstrable toxic or ill effects. There are few systemic therapeutic drugs of value which have a greater factor of safety than Tetrathionate.

Prior to our clinical use and investigations of Tetrathionate, we too studied the toxic effects on rabbits. Series of rabbits were given daily intravenous doses of 0.1, 0.2, 0.4 and 0.6 Gm. of Tetrathionate, which were equivalent to 9, 18, 36 and 72 times, respectively, the clinical dose per kilogram recommended for therapeutic use. Daily injections of 0.4 Gm. (35 times the clinical dose) for three days (total of 1.2 Gm.) resulted in death of the animals from twelve hours to three days after the third dose. Autopsy study revealed edema and necrosis of the liver, kidney, heart and other organs. Rabbits given the 0.1-Gm. dose (9 times the clinical dose) daily for twelve days (total of 1.2 Gm.) showed no ill effects, thrived and gained weight. Autopsy study revealed no evidence of nephrotoxic or any other toxic effect. Studies on these animals included blood and platelet counts, hemoglobin, blood clotting time and glutathione, fibrinogen and prothrombin contents. Even with the fairly large doses used in the latter series of rabbits we found no deleterious effect.

The clinical dose which we recommended after extensive clinical and animal investigations with various size doses is 0.4 or 0.6 Gm. of sodium tetrathionate. This is equivalent to an average of 7 mg. per kilogram, a really small fraction of the toxic doses used in the investigations by Gilman. Even our most intensively treated patients show no evidence of nephrotoxic or other toxic effects; some of these have been followed for ten years and have received more than 300 injections. Occasionally, transient reactions with faintness, nausea, abdominal discomfort or weakness have followed an initial or too rapid injection. However, the same reactions occur with the use of sodium thiosulfate. Prompt relief is obtained by the ingestion of milk, food or water. Smaller subsequent doses or slower injection will almost always prevent recurrences of these reactions.

Our clinical investigation during the past ten years has included laboratory studies on the urine, blood cell counts, clotting time, sedimentation rate, basal metabolism rate and determination of the blood cholesterol, lipids, fatty acids, phospholipids, nonprotein nitrogen, urea, protein, creatinine, gluta-

thione, sugar, calcium, potassium, sodium, prothrombin and oxygen and carbon dioxide capacity and content (saturation) of the arterial and venous blood. The results of some of these studies have been published and are available in the surgical literature (*Arch. Surg.*, 38:191 [Feb.] 1939; 40:190 [Feb.] 1940; *Surgery*, 11:101 [Jan.], 1942; *Ann. Surg.*, 113:1107 [June], 1941). When changes followed injections of Tetrathionate they were usually favorable for the continued use of the drug; no deleterious effects have been observed.

My own analysis of Gilman's reported observations is that (1) Tetrathionate, when used in doses comparable to those used clinically, is not toxic to experimental animals and (2) the conversion and elimination of the Tetrathionate from the body are much slower than for the thiosulfate solution. However, the delay in eliminating the drug in the body is not sufficiently prolonged to produce deleterious or toxic cumulative effect from daily injections and is the reason for our original decision, ten years ago, for substituting the tetrathionate for the thiosulfate solution. We arrived at the same conclusion from the results of studies on the elimination of the sulfur in the urine. This part of the investigation was done with the cooperation of Dr. Andrew McNally, toxicologist, who originally suggested the use of Tetrathionate.

In view of the benefit which so many patients with thromboangiitis obliterans, thrombophlebitis and other diseases with tendency for intravascular clotting have received from the therapeutic use of Tetrathionate (Searle) and in the absence of any clinical or laboratory evidence of toxicity in the doses we advise, it would appear that the Council should review all the information available and reconsider its recommendation that the "use of Tetrathionate in medicine should be abandoned."

Yours truly,

FRANK V. THEIS

Dr. Geza de Takats of Chicago also has written as follows under date of April 7, 1947:

I have delayed giving you my reaction to the statement made by your committee regarding tetrathione because I wanted to study the article of Gilman and also look over our records regarding any untoward results with the drug.

Obviously, sodium tetrathionate as used in Gilman's experiments was being used in a dose about thirty-five times the dose used in patients. I might say that our group has never made any renal function tests before and after use of sodium tetrathionate in man. However, with the exception of dizziness, flushing of the face or short attacks of nausea which may follow any intravenous injection, no harmful effects have been obtained.

My assistants and I use tetrathione rather sparingly and certainly have made no such extensive use of it as has Dr. Frank Theis and his group. However, if your committee based its opinion on the data available from Gilman's experiments, very few potent drugs can be used at present.

If you gave a dog or rabbit thirty-five times the dose of prostigmine, mecholyl, heparin, dicumarol and many others, there would be widespread toxic damage and mortality among the animals.

Certainly the quoted experiments do not reproduce clinical conditions and I am writing to suggest that the committee review its statement and if necessary conduct some more experiments based on controlled clinical material.

No nephrotoxic effects were observed in the

patients treated by Dr. Theis and his associates and apparently these investigators feel that there is little if any danger of such effects from the doses that they have used clinically. However, when an agent is capable of interfering with the important but insufficiently known SH functions, a word of caution is not amiss. It should be realized at least that the dosage must be kept at a minimum and the renal function kept under close observation. Further observations may reveal valuable data.

PHARMACIST BECOMES CHIEF OF NEW CORPS



COL. OTHMAR F. GORIUP, pharmacist and member of the AMERICAN PHARMACEUTICAL ASSOCIATION, is shown above being sworn in as chief of the new Medical Service Corps of the Army on September 29. Left to right are Maj. Gen. Malcolm C. Grow, the Air Surgeon; Col. Goriup; Mrs. Goriup; Col. Paul I. Robinson, MC, chief of the Personnel Division, Surgeon General's Office; Lt. Col. R. J. O'Connor and Brig. Gen. George E. Armstrong, Acting Surgeon General.

Col. Goriup was formerly chief of the Allotment and Procurement Branch of the Medical Personnel Division in the Office of the Air Surgeon. He is the first chief of the new Corps, established by the last Congress, which will include commissioned specialists in many fields allied to medicine, such as bacteriologists, pharmacists, psychologists, sanitary engineers, optometrists, chemists and electronics experts. Another pharmacist will be appointed to serve under Col. Goriup as head of the Pharmacy, Supply and Administration Section.

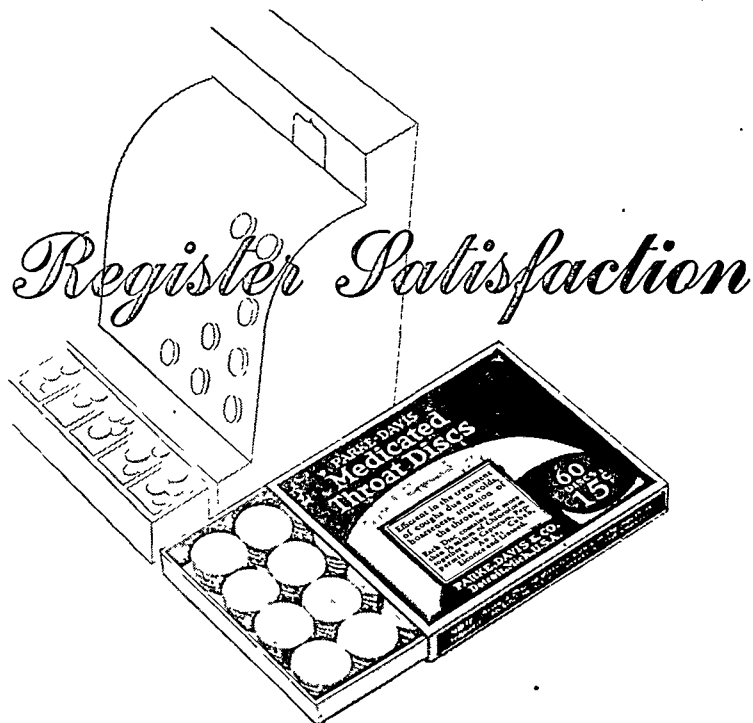
In referring to the qualifications Col. Goriup has for the new Medical Service Corps post, Gen. Armstrong cited the distinguished record Col. Goriup made during the war in the Air Trans-

port Command. Last March he was awarded the Legion of Merit for his exceptional services in assisting in the development of the program for air evacuation of the wounded and for improvement of the ATC medical service.

Since August, 1946, Col. Goriup has been chief of the Allotment and Procurement Branch in the Office of the Air Surgeon. From June, 1942, until October, 1945, he was chief, Supply and Operations Division and Administrative Assistant in the Office of the Surgeon, Headquarters, Army Transport Command, Washington, D. C. From March, 1941, to June, 1942, he was Administrative Officer at the Station Hospital at Langley Field, Va.

Col. Goriup, who is forty-two years old, was graduated from the University of Pittsburgh in 1929 with a Graduate Pharmacist degree and from St. Bonaventure in 1939 with a Bachelor of Science degree. He is a member of the AMERICAN PHARMACEUTICAL ASSOCIATION, American Chemical Society, American Society of Hospital Pharmacists, Kappa Psi pharmaceutical fraternity, and a fellow of the American College of Apothecaries.

Col. and Mrs. Goriup and their son, Franklin, live in Fairlington, Va.



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Typical Days

FROM THE SECRETARY'S DIARY FOR SEPTEMBER

—1st—

ENROUTE from Milwaukee, where the 1947 convention is now history, to Philadelphia to pay our last respects to Mrs. Ambrose Hunsberger, who passed away while on vacation in Maine. A perfect lady, gone to her eternal reward, mourned by hundreds of friends who knew her as "first lady" when her husband was president of the N. A. R. D., the Pennsylvania Pharmaceutical Association and numerous other pharmaceutical organizations in Philadelphia and who graced many a convention of the A. Ph. A. Our sympathies go out to Ambrose Hunsberger, pioneer exclusive prescription pharmacist in Philadelphia, vice-president of the Philadelphia College of Pharmacy and a preceptor par excellence as this pharmacist can testify from personal experience under his tutelage.

As our train wends its way over the Pennsylvania mountains and 'round the horseshoe bend there is plenty of time to gaze at the beauties of nature and to let the mind wander back to the happenings of the previous week and to the anticipated progress that lies in the future. We have a feeling of pride in the achievements of the members and officers of the A. Ph. A., which continue to bring us increased respect from the various branches of the government, the organized sister professions and the many workers in our own ranks who have occasion to make use of the facilities of the ASSOCIATION and to test its ability to serve American pharmacy. Team work is the order of the day.

—2nd—

Putting Labor Day behind us so early in September seems to provide a running start for the busy fall and post-convention season. On the return to the office many problems await solution, but we have gathered renewed confidence in the future of this organization from the many pleasant contacts at Milwaukee.

It is particularly pleasing to note the splendid progress being made on the memorial flagstaff and surrounding marble bench. Much accumulated mail to peruse and many a report and document await reading and disposal.

—3rd—

A pleasant chat with Carson Frailey, discussing among other things the pending Pharmaceutical Survey reports as they relate to prescription practice. Now reviewing advertising and publication problems with Messrs. Nowell, Winter and Powers, while Glenn Sonnedecker is putting the heat on the

printers at Easton to bring the convention issue of the JOURNAL to our readers on time.

—4th—

Saddened by word from Dean Schaefer that Emeritus Dean Anderson of the Brooklyn College of Pharmacy passed away. Among the visitors today were numbered Al Skean of the Atlantic City Convention Bureau who seems happy over the prospect that A. Ph. A. may meet in Atlantic City, in 1950.

—5th—

Working on post-convention business including minutes of the "old" Council meetings prior to departure for a week end in New Jersey.

—6th—

Paying final tribute to William C. Anderson, past honorary president of the A. Ph. A. and former dean of the Brooklyn College of Pharmacy, who was buried from his boyhood home in Keyport, N. J. Here met a large delegation of New York pharmacists including Hugh Craig, Bob Gerstner, Sasmor, Fonda, Heimerzheim, Christ and many others. After the services, with Treasurer and Mrs. Hugo Schaefer to spend a quiet afternoon transacting A. Ph. A. fiscal business and reviewing the resolutions.

—8th—

For the first time in several weeks the entire staff was again assembled and there was much discussion of the work ahead as outlined for us at Milwaukee. In the late afternoon a visit with Congressman Durham who has agreed to accept the honorary chairmanship for the dedication ceremonies incident to erection of the war memorial.

—9th—

Now off to Baltimore to inspect some printing plants and to visit with H. A. B. Dunning whose advice on A. Ph. A. problems is always sound and forward-looking. Returning in time to Washington to complete the work on the bulletin which carries information on resolutions passed at Milwaukee.

—10th—

Rushing through the mail and office routine in order to leave with Dr. Powers on the noon train for Trenton, N. J., and from there via automobile to Pocono Manor for the three-day meeting of the U. S. P. Revision Committee. This is an ideal spot at which to combine some recreation with the intricate discussions of U. S. P. revision problems in subcommittees as well as meeting with the Committee as a whole.

—11th—

All day at the Pocono Manor Inn sitting first with the general Committee of Revision where the question of including information on therapeutics in the U. S. P. again occupied a goodly portion of the Committee's time without reaching any new conclusions.

After the luncheon the Committee split up into subcommittees with most interesting discussions of problems of scope, galenicals, chemicals and packaging. The discussions continued after dinner

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but there were also opportunities for visits with friends of long standing and the discussion of extra-pharmacopœial matters.

—12th—

All day the meetings of subcommittees continued, and it is remarkable to what an extent decisions can be reached promptly when personal contact replaces lengthy correspondence.

—13th—

And now the final session of the full Committee of Revision, followed by the return trip to Washington via New York where President Zugich, Secretary Godley and Treasurer Sister Etheldreda of the American Society of Hospital Pharmacists met with Gloria Niemeyer and the Secretary of the A. Ph. A. to discuss procedures for further integration of the activities of the Society and the A. Ph. A. in the year ahead.

—14th and 15th—

After a Sunday spent in peace at the office, the mid-September rush of activity at the headquarters was on in full force on Monday morning. Among the visitors were Prof. Liberalli of São Paulo University, School of Pharmacy in Brazil, and Deputy Surgeon General Armstrong of the U. S. Army who inspected the building and facilities of the Association and seemed much pleased with future possibilities for cooperation in the development of the Medical Service Corps.

—16th—

At lunch with Comdr. Briggs of the Veterans Administration, discussing many angles of the pharmacy service so ably administered by him. An indication of the interest of railroads in recovering their lagging passenger traffic was a visit from a representative of one of the leading roads, and we told him plenty about the service we were not getting. After office hours a futile trip around Washington with a real estate agent who did not have the keys to places that looked good.

—17th—

This afternoon a pleasant visit with Adm. Pugh, Deputy Surgeon General of the Navy, discussing problems connected with the organization of the

Medical Service Corps in the Navy and particularly the Pharmacy Section. Now marveling at the precision of the stonemasons who fashioned the marble bench which will surround the memorial flagstaff on our grounds. A beautiful piece of sculpturing enhanced by the setting in which it will find permanent rest.

—18th—

The day's proceedings enlivened by a telephone call from Troy Daniels in far off San Francisco urging an early visit to settle preliminary convention plans for 1948. In the afternoon to the Federal Security Agency to meet the new administrator, Oscar Ewing, who impresses one as a capable official with sound and constructive plans for the future of the Public Health Service, the Food and Drug Administration, the Social Security Board and the Office of Education, all of which come under his jurisdiction. Without question these agencies constitute a sufficiently broad field of activity to warrant cabinet status for this agency. On the way out a session with Mary Switzer, who is the right hand of the administrator and who keeps her finger on the pulse of the agencies under his supervision.

—19th and 20th—

Grinding away at the post-convention chores and endeavoring to obtain a firm commitment from the construction company as to the date of completion of the war memorial. It looks as though the dedication ceremonies may have to be postponed until spring because of the uncertainties of the delivery of the bronze section of the memorial and consequent completion too late for an outdoor ceremony this fall.

Late in the evening to Trenton, N. J., and an early Saturday visit with Secretary Debus of the New Jersey Pharmaceutical Association and Secretary Powers of the State Board of Pharmacy.

—22nd—

A lengthy discussion with Capt. Eaton and Comdr. Lyons of the U. S. Navy who are working on the regulations for activating the Medical Service Corps, with many a new problem posed for the Navy which has never had commissioned pharmacists among the personnel of the regular Navy.

—23rd—

Much activity in completing the work of the day and preparing for the trip to Louisville to address the Kentucky Pharmaceutical Association. Off on the "National Limited" for Louisville at 5:30 p. m., enjoying a good dinner on the train and finding time to catch up with essential reading.

—24th—

A profitable day spent at Louisville, Ky., first with the Kentucky Pharmaceutical Association, addressing them in the morning on "New Horizons for Pharmacy in the United States," then visiting the Louisville College of Pharmacy where classes were just getting under way. Busy Kentucky Association Secretary Josey turned us over to Tom Hoskins who knows his way around among the prescription compounders and was able to show us

the cream of professional pharmacy in Louisville before train time.

At 5:50 on the "Diplomat" to Washington with a bevy of Republican women bound for a three-day sojourn in the nation's capital occupying a full car and making the diner a lively place. At our table was one good lady who had never eaten a meal on a railroad diner and had not traveled by rail for more than thirty years. It is good to see these folks getting a first-hand view of what goes on in Washington, albeit the impression may be similar to those of foreign visitors to the United States who spend a day here and there and then write a book with expert opinions on how the government works.

—25th—

Returning to Washington shortly after noon found many a telephone call to be returned. From Gen. Armstrong came the good news that Lt. Col. Othmar F. Goriup, a pharmacist, had been officially named to head the Medical Service Corps of the U. S. Army as the first chief of that new division of the Medical Department.

—26th—

Much grief connected with the installation of a

new oil tank to feed the heating system at headquarters. One gets a taste of the unsatisfactory conditions surrounding the construction industry these days, with impossible promises carelessly carried out and everybody getting sour and disgusted with everybody else. But if the construction industry is in difficulties, what of the director of the Pharmaceutical Survey with whom we had lunch today at the Cosmos Club? If each of the various subdivisions of American pharmacy could prevail upon the good doctor to listen to its tale of woe alone and shape the recommendations without reference to other tales of woe, there would be at least ten divergent final reports—but the director is permitted to make only one final report.

—27th—

Greatly saddened by telephone information from Dean Series of the untimely passing of Elmer Wirth, pharmacognosist of note and co-worker in the field of general pharmacy. Such men can ill be spared at a time when pharmacy is short of teaching personnel and scientific leadership.

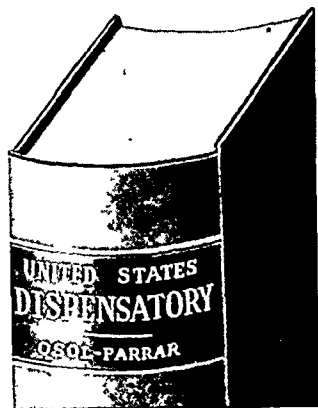
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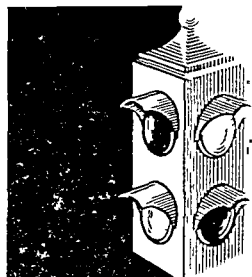
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HEADQUARTERS (from page 535)



Synchronization

For Corrective Therapy
and
Maintenance of a Symptom-free State
in
GASTROINTESTINAL DYSFUNCTIONS

The attention of physicians is now being directed
to the comprehensive therapy offered by the
Maltbie tablet

LUSYN

BRAND OF HOMATOPHENAL MALTBIE

CONTAINING:

HOMATROPINE METHYLBROMIDE - 1/24 gr.

A potent antispasmodic 1/30 to 1/45 as toxic as atropine.

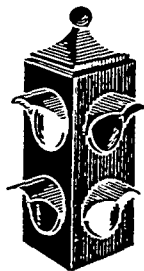
ALUKALIN - 5 gr.

A demulcent antacid-adsorbent containing kaolin and alumina gel.

PHENOBARBITAL - 1/8 gr.

A sedative which in addition tends to decrease the tonus of intestinal musculature.

Available in bottles of 100, 500
and 1000 tablets from your
Wholesaler.



THE MALTBIE CHEMICAL COMPANY
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adequate labeling, it has been twisted into a law that promotes self-medication. Those who seek to increase the exemptions from the restrictive provisions of the pharmacy laws have taken advantage of the confusion with respect to warning regulations to proclaim that there exist today only two types of drugs, to wit: those to be sold as packaged medicines across the counter and those limited to prescription. Based on such a premise the Pharmacy Act which contains an exemption, such as "nothing in this Act shall be construed to apply to the sale of commonly used household remedies and other products packaged and labeled in accordance with the Food, Drug and Cosmetic Act," would serve to make a vast majority of all drugs and medicines salable without professional supervision.

Many of the men in the proprietary medicine industry today are pharmacists. Many have contributed to worth-while causes in pharmacy. Many have contributed to the support of colleges of pharmacy through the American Foundation for Pharmaceutical Education. It seems very difficult to believe that the legislative representatives of the Proprietary Association are carrying out the wishes of these men. One cannot conceive of the existence of individuals in this industry who would be so shortsighted as to support the development of colleges of pharmacy and the recruitment of students for these colleges only to turn them out as registered pharmacists limited in their responsibility to the compounding of prescriptions and the sale of such highly toxic drugs as require unusual safeguards, which even the representatives of the Proprietary Association admit are dangerous to the public.

We prefer to believe that some enthusiastic legislative representative or paid organizer has overstepped the mark in this matter and needs to be called to order by the Proprietary Association.

We regret the necessity for a public discussion of this matter even in a professional publication. However, it has reached the point where we should have a showdown and name the producers of pharmaceuticals who deliberately plan to bypass the pharmacy as the properly constituted legal outlet for drugs and medicines. Helping to create a new and continually increasing group of outlets whose interest in the public health is zero, and who enter into this unholy alliance for no other reason than to increase their volume of sales regardless of the welfare of the public, is not a creditable activity for anyone connected with American pharmacy, to say the least.

If the full light of publicity is ever shed upon

this situation we have no doubt that public opinion will force members of state legislatures to take the same view of this problem which has been taken by the profession of pharmacy and the allied health professions.

FIRST USP SUPPLEMENT ISSUED

The first sheet supplement to U. S. P. XIII has been issued by the Committee of Revision. The supplement includes a number of changes that should be in the hands of every owner of a Pharmacopœia, Dr. E. Fullerton Cook, Committee chairman, points out.

Copies are available on request from the U. S. P. Revision Committee, 4738 Kingsessing Ave., Philadelphia 43.

WILLIAM C. ANDERSON DIES, WAS HONORARY HEAD OF A. PH. A.

Dr. William C. Anderson, a former honorary president of the AMERICAN PHARMACEUTICAL ASSOCIATION and dean emeritus of the Brooklyn College of Pharmacy, died at his home in Keyport, N. J., on September 3. He was eighty-two years old.

Dr. Anderson graduated in 1891 with the first class from the Brooklyn College. After practicing retail pharmacy for a number of years he sold his pharmacy to devote full time to the College as an educator and administrator. He was dean from 1902 until 1937 when he retired.

Among other posts he had held the presidency of the New York State Board of Pharmacy.

ARCHAMBAULT HEADS U.S.P.H.S. PHARMACY SERVICE

GEORGE F. ARCHAMBAULT, Massachusetts pharmacist and lawyer, has been named chief of the newly organized pharmacy service in the Hospital Division of the U. S. Public Health Service. Mr. Archambault will direct a program to unify and develop the pharmacy service provided in all of the Service's 24 marine hospitals and in many of the medical relief stations, and to coordinate these activities with services of other professional groups.

Mr. Archambault brings to his position a broad background as pharmacist, pharmaceutical educator and administrator. He is a graduate of both the Massachusetts College of Pharmacy and the Northeastern University School of Law. Since 1931 he has been a member of the faculty of the Massachusetts College of Pharmacy in the departments of pharmacy and business administration. During the war years he was loaned by the College to the U. S. Public Health Service to serve as chief pharmacist at the U. S. Marine Hospital in Boston and to develop pharmaceutical service in that institution. Later, in 1946, he was granted a year's leave of absence to serve as director of professional relations for the Liggett Drug Co. in the New England states. He has also served as instructor in the Massachusetts Department of Education extension program as a lecturer on drugstore management.

Mr. Archambault holds membership in the AMERICAN PHARMACEUTICAL ASSOCIATION, American Society of Hospital Pharmacists, the Boston and Cambridge Bar Associations and is a member

of the Rho Chi honorary fraternity. His publications on pharmaceutical jurisprudence, management and professional relations have appeared in this and other journals.



GEORGE F. ARCHAMBAULT

New A. Ph. A. Members

The American Pharmaceutical Association extends a cordial welcome to the men and women joining in its expanded program on behalf of the profession. Those accepted for active membership during the month preceding September 20 are listed below.

NEW LIFE MEMBERS

Rothrock, Russell B.,
Evansville, Ind
Christian, John E.,
W. Lafayette, Ind.
Wilson, Stephen,
Pittsburgh, Pa
Netz, Charles V.,
Minneapolis,
Minn
Merchant, Eugene
E., Jr., Columbia,
S C
Data, John B., Lafayette,
Ind

CALIFORNIA

Atchley, Homer E, Yreka
Dickenson, Alden, Yreka
Elmore, Paul Roy, Petaluma
Greene, Earl C, Yreka
Hickey, E A, Weed
Jones, Cethil, Dunsmuir
Kimes, Gloria F, San Francisco
King, F T, Dunsmuir
Prell, Morris, Long Beach
Teshima, Henry, San Francisco

CONNECTICUT

Pelchar, John Arthur, Terryville

DISTRICT OF COLUMBIA

Hocking, Harold J, Washington

GEORGIA

Dunaway, W H., Marietta

IDAHO

Pirquet, Vera, Sun Valley

ILLINOIS

Allison, Charles B, Chicago
Gronau, Arthur P, Chicago
Metzler, Kenneth R, Waukegan
Stanish, Edward S, Highland Park
Thoenes, Lawrence A, Chicago
Thompson, Robert Edward, Lisle
Wiertelak, Albert P, Chicago

INDIANA

Perrin, R C, Muncie

MAINE

Frawley, Francis A, Bangor

MICHIGAN

Barley, Louis, Detroit
Bodd, George W, Detroit
Hamaker, Ambrose C, Dearborn
Shepard, Samuel, Detroit
Stein, Louis S, Hibbing

MINNESOTA

Dahl, Joseph E, Minneapolis
Pasternacki, John G, Virginia

MISSOURI

Grosicki, Thaddeus Stanley, St Louis
Weaver, Jesse H, Overland

MONTANA

Durham, William H, Missoula

NEW HAMPSHIRE

Abbott, John H, Concord

NEW JERSEY

Barney, L D, Nutley

Charnowitz, Charles H, Bloomfield
Howland, Frank O, Jr, Glen Rock

NEW YORK

Firemark, Samuel, Laurlinton
Frankel, Israel, Brooklyn
Sister Mary Columba, Harrison
Steinmann, Herbert R, New York
Stern, Lewis W, New York
Turner, Richard T, New York
Woodward, Edson F, Mt Vernon

OHIO

Freking, Harold C, Cincinnati
Sister Mary Paul Johnston, Cleveland

OREGON

Knight, R Lee, Portland
Sather, Victor A, Silverton

PENNSYLVANIA

Benson, Alfred J, Scottsdale
Dozois, K Pierre, Ambler
Frye, Lamar F, Philadelphia
Moll, Russell O, Reading

RHODE ISLAND

Navach, Joseph F, Warren

TEXAS

Connor, Charles M, El Paso

UTAH

Neeley, A LeRoy, Salt Lake City
Sundberg, Jack C, Salt Lake City

WISCONSIN

Aune, Roy A, Ladysmith
Bahringer, Wallace H, Milwaukee
Barrows, Hollis T, Milwaukee
Bookstaff, Samuel B, Milwaukee
Burg, Chester J, Elkhorn
Coyne, John L, Milwaukee
Duffner, Roy A, Milwaukee
Gehrs, Kathryn D, Milwaukee
Haberle, Martin F, Milwaukee
Harris, Gordon, Milwaukee
Iverson, Arthur M, Cambridge
Kyes, Eeshe H, Milwaukee
Leverenz, Charles E, Milwaukee
Maloney, F J, Wauwatosa
Mathes, E H, Milwaukee
McAllister, Francis A, Sr, Milwaukee
Moen, Reuben E, Milwaukee
Mooney, Wm P, West Allis
Mueller, Carl F, Milwaukee
Muth, John H, Milwaukee
Nelson, Sherwood E, Milwaukee
Porter, William R, Racine
Rubin, Harry C, Milwaukee
Schulkin, Joseph, Madison
Schulz, Donald Walter, Darlington
Sister M. Blanche Noe, Milwaukee
Starl, Ralph H, Milwaukee
Steffens, Ralph J, Milwaukee
Tanty, Emil G, Milwaukee
Wenklauf, Fred W, Milwaukee
Winiarski, Mrs Gertrude, Milwaukee

FOREIGN

Candal, Joaquin Lopez, Fajardo, Puerto Rico
Dean, Royal George, Hawaii
De Leon J Alfonso, Mexico City, Mexico
Fahmy, Ibrahim Ragab, Cairo, Egypt
Northgraves, Orlean M, Toronto, Ontario, Can
Peterson, Mervin Roland, Saskatoon, Can



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33rd and Locust Streets, Philadelphia 4, Pa. Founded in 1821

AMERICAN PHARMACEUTICAL ASSOCIATION


Your Pharmacist works for Better Community Health



*health alone
is victory*
— GARFIELD



NATIONAL PHARMACY WEEK
DEDICATED TO THE
FIGHT AGAINST CANCER

A Health Project Sponsored by the American Pharmaceutical Association

April 24 to 30

INHALE

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*Aerobalor**

EXHALE

... the revolutionary development for

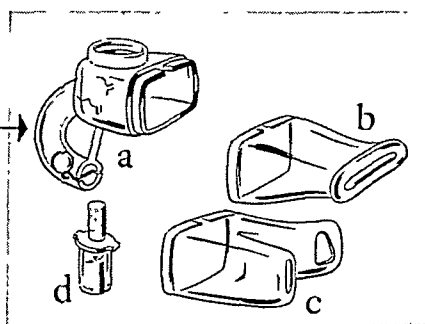
Penicillin Powder Inhalation

Yes... *Aerobalor* is a *revolution* for physician and patient. And it's a *revelation* to the alert pharmacist who ties in with the powerful ABBOTT promotion program. Everywhere, *Aerobalor* is making firm friends and welcome profits. And no wonder, for this handy unit is so obviously an *improved* method for administering penicillin to the upper and lower respiratory tract. It can be used anywhere, any time—with ABBOTT Sifter Cartridges—for either nasal or oral inhalation. The patient simply attaches the mouthpiece or nosepiece to the discharge chamber, inserts a cartridge of penicillin and "smokes" the *Aerobalor* like a pipe—by inhaling, removing, exhaling. Each cartridge contains 100,000 units of finely powdered crystalline penicillin G sodium. Penicillin powder inhalation is indicated for use in infections of upper or lower respiratory tract produced by organisms susceptible to penicillin... While we're a bit allergic to that word "sensational," can you think of a better term to describe *Aerobalor* and Sifter Cartridge profit possibilities? It's the season's fastest-selling specialty. Be *sure* your stock is adequate!

*Trade Mark for ABBOTT'S Powder Inhaler

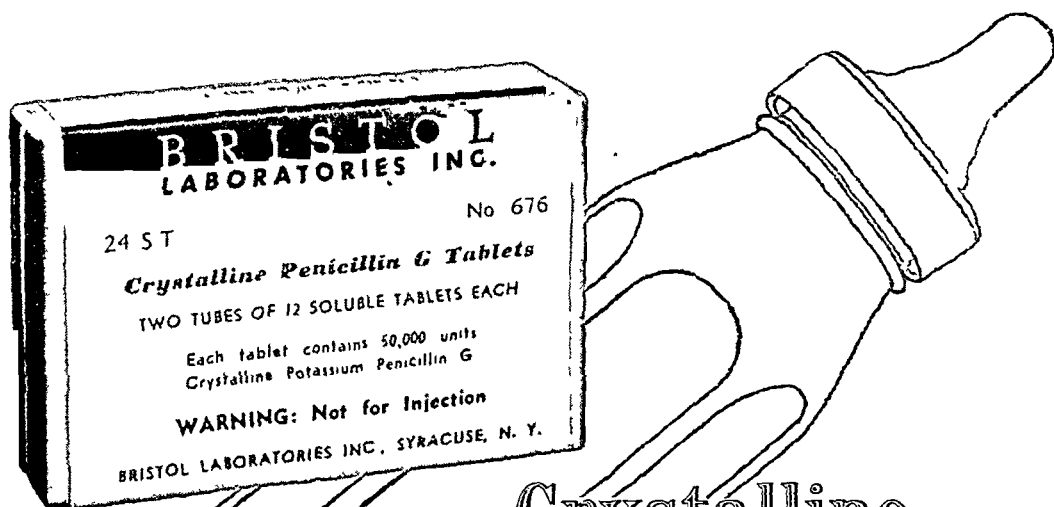
Abbott

(a) Discharge chamber of *Aerobalor* is attached either to (b) Mouthpiece or to (c) Nosepiece, for use with (d) the Abbott Sifter Cartridge. As patient inhales, air enters curved intake tube, causing metal ball to strike against Sifter Cartridge. This shakes small amount of powder into stream of air, where it is carried to respiratory passages.



Convenient

...and for many purposes
superior to other forms of penicillin



Crystalline Penicillin G Tablets

soluble

Here is penicillin in a form which supplies the answer to many professional needs. Bristol Crystalline Penicillin G Tablets, Soluble, consist entirely of penicillin, with no binder, excipient or buffer. Water, milk, saliva, saline solution, and other aqueous media serve as vehicles.

Physicians welcome the ease and convenience of the Soluble Tablets for administering penicillin to infants. The tablets dissolve readily and do not affect the flavor of the feeding formula. Other uses include the quick and accurate preparation of solutions for aerosol inhalation therapy, and sublingual administration to patients who cannot swallow tablets.

*Bristol Crystalline Penicillin G Tablets,
Soluble, contain 50,000 units each
and are supplied in a prescription
package containing 24 tablets.*



NOW... MODERNIZE YOUR R & DEPARTMENT AT NO EXTRA COST

Do it with the New Merck

Fused-Label Chemical Bottles

RAHWAY, N. J.—Merck & Co., Inc. has begun distribution of the new Merck *fused-label* chemical bottle sets. Pharmacists who have examined these uniquely modern, permanent containers state that they are ideal in many ways.

These new containers give greater legibility to labels. The labels take plenty of wear without becoming soiled or nicked. Any soilage is easily removed with a cloth or a piece of paper. Bottles and labels are designed for profes-

sional appearance and workability. The "Duraglas" bottles are extremely easy to handle, and the clear legibility of the labels is a real factor in saving the pharmacist's time.

There is no extra cost involved, since you pay no premium for the *fused-label*. For your convenience, the filled Merck bottles are assorted in sets of 25 and 12, according to size. Set A includes the twenty-five most frequently used prescription chemicals, in the 250 cc. size.

Dual Label Follows New Official Nomenclature



An outstanding feature of the new Merck *fused-label* bottles is the second or "working" label on the side opposite to the name label. While the display label carries the English title in bold type, working label give name, weight and other pertinent data. Both labels on each bottle are part of the glass itself.

PUNISHMENT TESTS PROVE WEARABILITY ON THE JOI

GLASSMAKER REVEALS PROCESS

*Label Fused to
Bottle at 1,100°
Temperature*

MILLVILLE, N. J.—Unlike old-time labels the new Merck chemical bottle label is *fired into the glass and is part of the glass itself*. In explaining the process, glass engineers report that pigments are fused at a temperature of 1,100°. This modern procedure assures permanency and legibility; the moistureproof label can be cleaned easily with a wet cloth or dry cloth.

**NEW BUT TRUE ... FACTS ABOUT THE
NEW MERCK
FUSED-LABEL
BOTTLES**

IF SOAKED IN
HOT WATER
FOR A
WHOLE
YEAR

IF EXPOSED TO
SUNLIGHT FOR A
WHOLE YEAR —
**THE LABEL
WON'T FADE!**

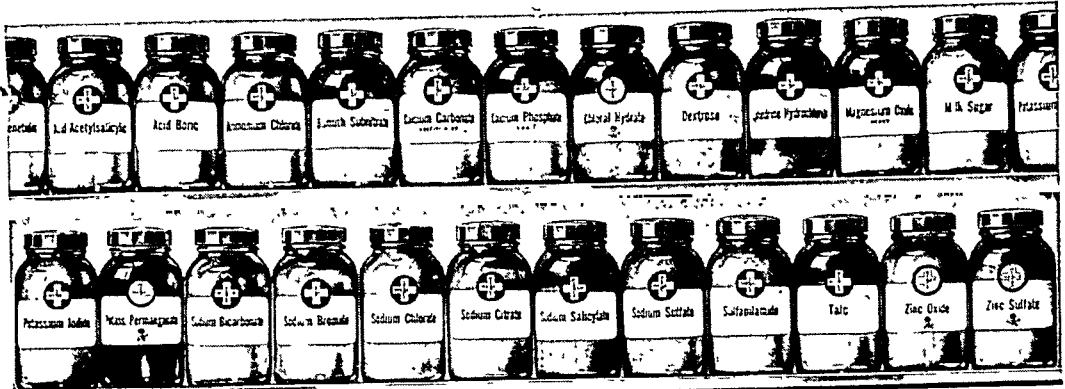
**THE LABEL
WON'T STAIN**
IF SOILED IN
ANY MANNER...
JUST WIPE IT CLEAN

**...THE LABEL
WON'T COME OFF!**

In the development of this new prescription chemical bottle, the labels were subjected to extensive "wear-and-tear" tests. They withstood, without damage, any commercial treatment that glass itself withstands. The labels cannot be marred by scratch marks in ordinary usage. They can be disfigured only by treatment that is capable of marinating glass, and by concentrate acids or lye.

Dual Label Improve Professional Store Appearance

SAN FRANCISCO, CALIF.—Test-store experience with the new Merck bottles has shown how the working set can serve as a good-looking professional display. With working labels facing the prescription laboratory, a modern, uniform row of display labels is seen by the customer.



Department Modernizing Made Easy

CHICAGO, ILL.—Midwest pharmacists who have inspected the new Merck fused-label prescription chemical containers

procedure. These pharmacists call attention to the following advantages of the new bottles:

- 1 Neat, professional appearance.
- 2 Practical, hand-grasp shape and legible lettering.
- 3 Labels that will last as long as the bottles.
- 4 Convenience in ordering by pre-arranged sets.
- 5 Availability of the new fused-labels without extra cost.

HOW TO ORDER

Get Set "A" Now... Other Sets Later

1. The New Merck fused-label bottles will be supplied in two sizes—250 cc., and 750 cc.
2. You pay no premium for the new fused-label.
3. The bottles are filled and can be ordered only in sets as listed at right.
4. Sets have been grouped according to frequency of use.
5. Bottles are not available singly or empty, except as replacements in case of breakage or loss, or in the event of chemical shortages.
6. Orders will be accepted now for any one or all sets.
7. Sets may be ordered for direct shipment by Merck & Co., Inc., from Rahway, N. J., St. Louis, Mo., or Los Angeles, Calif., with invoicing through your wholesaler. Or place your order with your Merck or wholesaler's representative.



CHEMICAL LIST—PRESCRIPTION SET

Each set in Schedule I consists of 25 chemicals in 250 cc. bottles
Each set in Schedule II consists of 12 chemicals in 750 cc. bottles

(Offer subject to price change and prior sale)

SCHEDULE I—250 cc. BOTTLES

SET A—\$12.62

Potassium Permanganate U.S.P. Gran.	4 oz.	Quinidine Sulfate Natural U.S.P.	1 oz.
Sodium Bicarbonate U.S.P. Powd.	4 oz.	Silver Protein Mild U.S.P.	15 oz.
Sodium Bromide U.S.P. Gran.	4 oz.	Sodium Iodide U.S.P.	15 oz.
Sodium Chloride U.S.P. Gran.	7 oz.	Tarpon Hydrate N.F. Powd.	1 oz.
Sodium Citrate U.S.P.	4 oz.	Theobromine	1 oz.
Sodium Salicylate U.S.P. Cryst. Free-Flowing	2 oz.	Theobromine Sodio Salicylate N.F.	1 oz.
Sodium Sulfate U.S.P. Gran.	8 oz.	Thymol U.S.P.	2 oz.
Sulfanilamide U.S.P. Gran.	8 oz.	Thymol Iodide N.F. Powd.	2 oz.
Sulfathiazole U.S.P. Not Steril.	8 oz.		
Talc, U.S.P.	8 oz.		
Zinc Oxide U.S.P.	8 oz.		
Zinc Sulfate U.S.P. Gran.	8 oz.		

SCHEDULE II 750 cc. Bottles

SET E—\$13.39	
Acetophenetidin U.S.P. Powd.	10 oz.
Acid Acetylsalicylic U.S.P. Powd.	14 oz.
Acid Boric U.S.P. Powd.	15 oz.
Calcium Carbonate Precip. U.S.P.	8 oz.
Calcium Phos. Tribasic N.F. Precip.	7 oz.
Magnesium Oxide Heavy U.S.P.	3 oz.
Milk Sugar U.S.P. Powd.	15 oz.
Potassium Citrate U.S.P. Gran.	24 oz.
Potassium Iodide U.S.P. Gran.	24 oz.
Sodium Bicarbonate U.S.P. Powd.	24 oz.
Sodium Salicylate U.S.P. Cryst.	16 oz.
Free-Flowing	14 oz.
Zinc Oxide U.S.P.	14 oz.

SET F—\$14.58	
Ammonium Chloride U.S.P. Gran.	16 oz.
Bismuth Subnitrate N.F.	15 oz.
Chloral Hydrate U.S.P. Loose Cryst.	16 oz.
Dextrose U.S.P.	18 oz.
Potassium Permanganate U.S.P. Gran.	32 oz.
Sodium Bromide U.S.P. Gran.	48 oz.
Sodium Chloride U.S.P. Gran.	80 oz.
Sodium Citrate U.S.P.	24 oz.
Sodium Sulfate U.S.P. Gran.	20 oz.
Sulfanilamide U.S.P. Not Steril.	10 oz.
Talc U.S.P.	14 oz.
Zinc Sulfate U.S.P. Gran.	16 oz.

SET G—\$12.37	
Acid Citric U.S.P. Gran.	20 oz.
Acid Salicylic U.S.P. Fine Cryst.	8 oz.
Acid Tartaric U.S.P. Fluffy	5 oz.
Bismuth Subcarbonate U.S.P.	16 oz.
Calcium Phosphate Dibasic U.S.P.	16 oz.
Calcium Phosphate Trisbasic U.S.P.	8 oz.
Magnesium Bromide U.S.P. Gran.	32 oz.
Saccharin Sodium U.S.P. Powd.	8 oz.
Sodium Benzoate U.S.P. Powd.	8 oz.
Strophanthine N.F. Cryst.	24 oz.

SET H—\$15.33	
Ammonium Carbonate U.S.P. Chips	16 oz.
Calcium Gluconate U.S.P. Powd.	8 oz.
Calcium Lactate U.S.P. Powd.	12 oz.
Kaolin Colloidal N.F.	10 oz.
Kaolin Colloidal N.F.	10 oz.
Lead Acetate U.S.P. Gran.	24 oz.
Magnesium Carbonate U.S.P. Powd.	3 oz.
Magnesium Carbonate U.S.P.	10 oz.
Magnesium Oxide U.S.P. Light Powd.	3 oz.
Quinine Sulfate U.S.P.	8 oz.
Sulfathiazole U.S.P. Not Steril.	15 oz.
Sulfur Precip. U.S.P.	14 oz.

SET B—\$10.77	
Acid Citric U.S.P. Gran.	7 oz.
Acid Salicylic U.S.P. Fine Cryst.	2 oz.
Acid Tartaric U.S.P. Fluffy	1 oz.
Ammonium Carbonate U.S.P. Chips	4 oz.
Bismuth Subcarbonate U.S.P.	4 oz.
Calcium Phosphate Dibasic U.S.P.	4 oz.
Calcium Phosphate Trisbasic U.S.P.	4 oz.
Choline Chloride	4 oz.
Kaolin Colloidal N.F.	4 oz.
Lead Acetate U.S.P. Gran.	8 oz.
Magnesium Carbonate U.S.P. Powd.	1 oz.
Magnesium Carbonate U.S.P.	3 oz.
Magnesium Oxide U.S.P. Light Powd.	1 oz.
Magnesium Trisulfate U.S.P.	3 oz.
Potassium Sulfate U.S.P.	12 oz.
Quinine Sulfate U.S.P.	1 oz.
Saccharin Sodium U.S.P. Powd.	4 oz.
Sodium Benzoate U.S.P. Powd.	3 oz.
Sodium Thiosulfate U.S.P. Cryst.	8 oz.
Strophanthine N.F. Cryst.	8 oz.
Sulfathiazole U.S.P. Not Steril.	4 oz.
Sulfur U.S.P. Precip.	3 oz.

SET C—\$16.22	
Acetanilid U.S.P. Powd.	3 oz.
Acid Benzoic U.S.P. Cryst.	2 oz.
Aluminum Chloride N.F.	6 oz.
Aminopyrine U.S.P. Powd.	1 oz.
Ammonium Bromide N.F. Gran.	10 oz.
Bismuth Subnitrate N.F.	4 oz.
Caffeine Citrated U.S.P.	1 oz.

Calcium Bromide N.F.	4 oz.
Calomel U.S.P.	1 oz.
Ephedrine Sulfate U.S.P. Cryst.	1 oz.
Hexamethylenamine U.S.P. No. 30 Mesh	8 oz.
Phenobarbital U.S.P.	1 oz.
Phenobarbital Sodium U.S.P. Gran.	1 oz.
Potassium Sulfated N.F.	16 oz.
Potassium Acetate U.S.P.	12 oz.
Potassium Chlorate N.F. Gran.	12 oz.
Potassium Guaiacolate Sulfonate N.F.	6 oz.
Quinine Sulfate U.S.P. Cryst.	1 oz.
Quinine Hydrochloride U.S.P.	1 oz.
Resorcin U.S.P. Recrystallized	2 oz.
Salol N.F. Gran.	4 oz.
Silver Nitrate C.P. Cryst.	16 oz.
Sulfathiazole Sodium U.S.P. Not Steril.	6 oz.
Theophylline Ethylenediamine U.S.P.	1 oz.
Zinc Chloride N.F. Gran.	10 oz.

MERCK & CO., Inc. Manufacturing Chemists RAHWAY, N. J.

Dept. M & P-24

Gentlemen:

Please reserve for me chemical sets checked below:

A ☐ C ☐ E ☐ G ☐
B ☐ D ☐ F ☐ H ☐

Wholesaler's name

Wholesaler's Salesman

Name or store label

Street

City

State

Calcreose

THE ORIGINAL BRAND OF
CALCIUM CREOSOTATE

FOR RESISTANT COUGHS



Maltbie

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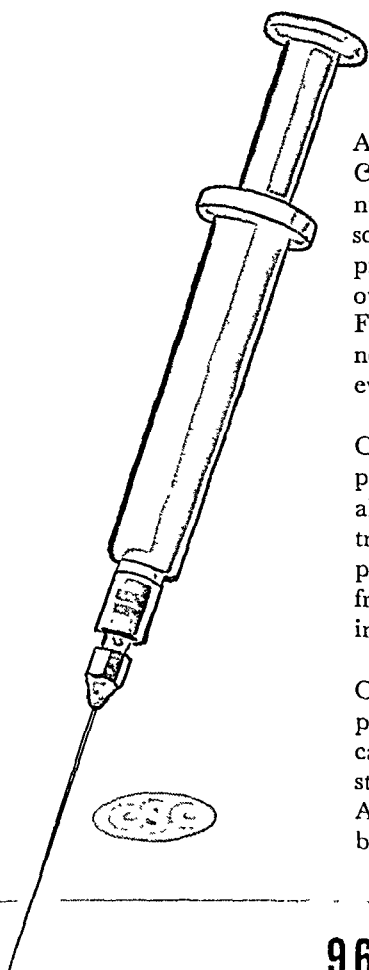
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Antibiotic therapy is greatly simplified when C.S.C. Crystalline Procaine Penicillin G in Peanut Oil with aluminum monostearate is prescribed. A single 1 cc. injection (300,000 units) produces therapeutic blood levels for 96 hours in over 90% of patients, *and for 48 hours in all patients.* For certainty of therapy, this preparation need not be given, as a rule, more often than once every other day.

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Indicated for antibiotic-analgesic therapy of hemorrhoids, anal fissure, cryptitis, and proctitis, each heat-stable, water-soluble TRESANOIDS suppository releases: *Tyrothricin*, 1 mg.; *Benzocaine*, 15 mg.; *PROPADRINE[®] HCl*, 20 mg.; *Bismuth subgallate*, 150 mg.; *Zinc oxide*, 150 mg. Supplied in boxes of 12.

Stock TRESANOIDS now! There'll be a big prescription demand for this heavily detailed, efficient, new preparation.

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Urinary Antiseptic of Choice—for *the chronic ambulatory patient*

MANDELAMINE*, recognized as a medication that quickly controls most urinary infections,¹ is ideally suited for use in the management of the resistant case, e.g., neurogenic bladder, nephroptosis with pyelitis, cystitis, prostatitis, nonspecific urethritis, infections associated with urinary calculi, pyelonephritis, and pyelitis. It is being used routinely for the chronic ambulatory patient, since its administration is remarkably free from toxic reactions or the development of sensitization, drug-fastness, or urinary concretions.^{1,2,3} Moreover, the simplicity of the oral regimen increases the likelihood of faithful adherence to your instructions between office visits.

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1 Carroll, G., and Allen, H. N. J. Urol 55 674 (1946) 2 Merricks, J. W. West Virginia M J 44 157 (1948) 3 Scudi, J. V., and Duca, C. J. J. Urol (to be published)

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New prescription products



Product descriptions may be clipped and filed on three- by five-inch cards. These are also indexed for quick reference in the "Monthly Drug Index" appearing on the last page of each issue. A product is described in this column for the information of pharmacists who may be asked by physicians to stock the drug, or who may receive professional inquiries about it. A listing does not imply evaluation or recommendation by the Association, nor does omission of any product have significance concerning its merit.

DIHYDROSTREPTOMYCIN

Description: The hydrochloride or sulfate of dihydrostreptomycin, a hydrogenated form of streptomycin.

Form Supplied: As a soluble powder in sterile rubber-stoppered vials each containing the equivalent of 1 Gm. of pure streptomycin base.

Action: Infections due to organisms susceptible to streptomycin, especially certain forms of tuberculosis. Said to be less toxic than streptomycin.

Administration: Usually 0.5 to 1.0 Gm. injected intramuscularly every 12 hours for 42 to 120 days, depending on type of tuberculosis. As with streptomycin, care must be taken in adjusting the dosage for patients with impaired kidney function, particularly if administration is prolonged.

Source: Hydrochloride: E. R. Squibb and Sons, 745 Fifth Ave., New York. Sulfate: Abbott Laboratories, North Chicago, Ill.; Eli Lilly & Co., Indianapolis, Ind.; Parke, Davis & Co., Detroit 32, Mich.; The Upjohn Co., Kalamazoo 99, Mich.

desoxyephedrine hydrochloride.

Form Supplied: 15-cc. dropper bottles.

Action: Relief of nasal congestion and possible prevention of infection from secondary invaders of the common cold.

Administration: Two or three drops every two to three hours.

Source: The Schering Corp., Bloomfield and Union, N. J.

GRAMODERM

Description: An antibiotic skin ointment containing 0.25 mg. of gramicidin in each Gm. of a hypoallergenic, penetrating base.

Form Supplied: 20-Gm. tubes.

Action: For treatment of skin diseases due to gram-positive organisms which respond to gramicidin.

Administration: Topically with an occlusive dressing every twelve hours.

Source: The Schering Corp., Bloomfield and Union, N. J.

DUOZINE DULCET TABLETS

Description: Flavored "candy" tablets containing in each tablet 0.15 Gm. of sulfadiazine and 0.15 Gm. of sulfamerazine.

Form Supplied: Bottles of 100 tablets.

Actions: For infections amenable to sulfonamide therapy.

Administration: As determined by the physician according to the nature of the infection.

Source: Abbott Laboratories, North Chicago, Ill.

GRAMINASIN

Description: An antibiotic nasal decongestant containing 0.005% gramicidin and 0.125% dl-

GRAMOZETS

Description: Troches containing 0.25 mg. of gramicidin and 5.0 mg. of benzocaine.

Form Supplied: Tubes of 12 troches, 12 tubes per carton.

Action: For relief of throat infections due to gram-positive organisms.

Administration: No more than eight troches per day.

Source: The Schering Corp., Bloomfield and Union, N. J.

(Continued, page 74)

FASTER

in vasoconstrictive
action

MORE PROLONGED

in decongestant
effect

For the symptomatic relief of colds,
sinusitis and allergic rhinitis

NEO-SYNEPHRINE[®]

Hydrochloride

NONIRRITATING

to sensitive mucous
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To clear nasal airways and
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Sulfathiazolate
for use when anti-
bacterial action in addi-
tion to nasal decongestion
is desired.

Neo-Synephrine, trademark reg. U. S. & Canada

(Continued from page 72)

LIFOSULFAS

Description: Coated tablets containing in each, sulfadiazine 167 mg., sulfamerazine 167 mg., liver concentrate 167 mg., and folic acid 0.25 mg.

Form Supplied: Bottles of 50 tablets.

Action: Used for treating infections due to sulfonamide-susceptible organisms and to control the toxic side-reactions such as anemia and granulocytopenia.

Administration: Adults, six to twelve tablets as initial dose followed by three tablets every four hours; children between 25 and 100 lb., an initial dose of four to twelve tablets, followed by one to three tablets every six hours.

Source: The Upjohn Company, Kalamazoo 99, Mich.

MOSIDAL

Description: Tablets each containing 0.15 Gm. of ethyl- β -methylallylthiobarbituric acid.

Form Supplied: Tablets in bottles of 25 and 100.

Action: Treatment of motion sickness.

Administration: 0.15 Gm. two to three times daily preferably beginning twenty-four hours before exposure to motion. Treatment should not be continued longer than five days at a time. Contraindicated in cases of impaired liver function.

Source: Abbott Laboratories, North Chicago, Ill.

PABALATE

Description: Enteric coated tablets containing sodium salicylate 0.3 Gm. and paraminobenzoic acid 0.3 Gm.

Form Supplied: Bottles containing 100 tablets.

Action: Antirheumatic.

Administration: Two tablets six to eight times daily initially, then reduction in dose after several days.

Source: A. H. Robins Co., Richmond, Va.

SOLULEXIN

Description: A sterile, desiccated powder containing in each vial liver extract derived from 10 U. S. P. units, folic acid 5 mg., thiamine hydrochloride 10 mg., riboflavin 10 mg., pyridoxine hydrochloride 5 mg., sodium pantothenate 50 mg., nicotinamide 250 mg., phenol less than 5 mg.

Form Supplied: 10-cc. vials each accompanied by one 5-cc. ampul of water for injection.

Action: Treatment of nutritional anemia.

Administration: The contents of a vial is dissolved in 1 to 2 cc. of sterile water for injection and injected intramuscularly.

Source: Upjohn Co., Kalamazoo 99, Mich.

THALAMYD

Description: Tablets of phthalylsulfacetimide (N^1 -acetyl- N^4 -phthalylsulfanilamide).

Form Supplied: 0.5-Gm. tablets in bottles of 100 and 1000 tablets.

Action: Bactericidal agent for enteric organisms as the Shigella-Salmonella groups without detectable blood levels of the drug being attained.

Administration: In dysenteric Shigella infection and preoperatively for abdominal surgery, 3.0 Gm., three times daily after meals; in ulcerative colitis 0.2 Gm. per Kg. per day in divided doses for ten days and repeated after rest period of five days if necessary.

Source: Schering Corp., Bloomfield and Union, N. J.

NOTICE**PAPERS FOR SECTION MEETINGS
OF THE AMERICAN PHARMACEUTICAL ASSOCIATION**

The next annual meeting of the American Pharmaceutical Association will be held in Jacksonville, Florida, April 24-30, 1949. Members planning to present papers before any Section during this meeting are requested to notify promptly the appropriate Section secretary. Titles and abstracts (not to exceed 250 words) of papers should be submitted to:

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has a double effect. It controls cough safely and effectively. It relieves the other distressing symptoms of the common cold.

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contains no narcotic drugs;

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relaxes the bronchial tree;

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pleasant tasting . . BENYLIN EXPECTORANT
has a mildly tart taste readily acceptable to children and adults.

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Medical Journal ads, direct mail and our medical service representatives have familiarized physicians in your vicinity with the advantages of BENYLIN EXPECTORANT. An ample supply will enable you to meet prescription demands.



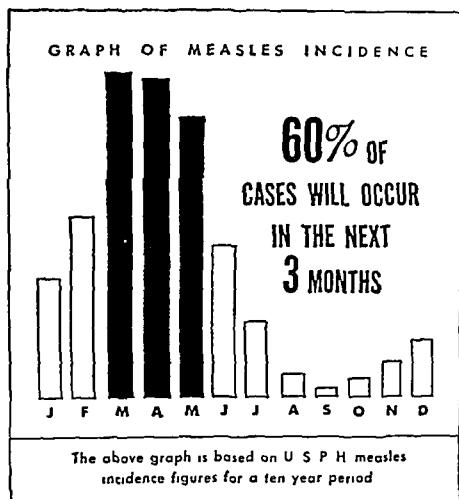
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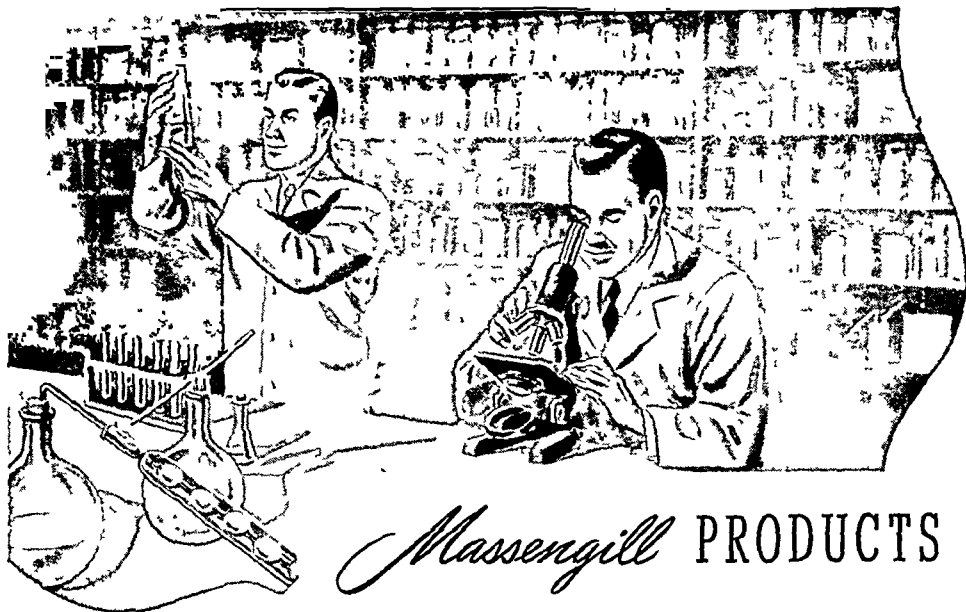
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Prepare now for measles' peak season just ahead. A phone call to your "special" list of doctors will enable you to estimate their requirements and be ready with stock to meet their needs.

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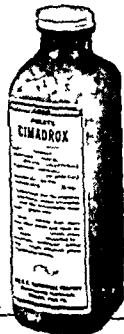
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HE HAS THE KNOWLEDGE, TRAINING, AND EXPERIENCE ON DRUG LABELS AND PACKAGES.

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ORAPEN IS UNIQUE

A special coating completely masks the taste of penicillin. ORAPEN is stable at ordinary room temperatures, eliminating necessity for refrigeration.

REFERENCES:

1. J. Pediat. 32:1 (1948).
2. Am. J. M. Sc. 213:513 (1947).
3. J. Pediat. 32:119 (1948).
4. New England J. Med. 236:817 (1947).
5. New York State J. Med. 48:517 (1948).
6. Lancet 1:255 (1947).

Orapen-250

Orapen-100 • Orapen-50

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Available in bottles of 10 and 50.

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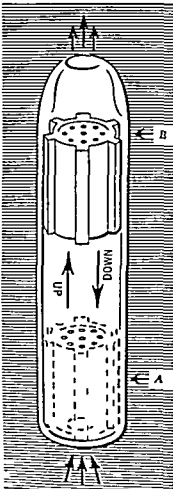
This message on oral penicillin therapy is now reaching all physicians in your community through medical journals, direct mail, and detailing, to build a strong demand for ORAPEN. When ordering from your wholesaler, specify ORAPEN-250, ORAPEN-100, or ORAPEN-50 to get the new 33½ per cent lower price recently announced on penicillin tablets.



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| <i>Disposable</i> | After treatment, the patient throws it away. |
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Inhalations draw container A to point B where penicillin powder enters the air stream

PENICILLIN DISPOLATOR

SQUIBB micro pulverized penicillin inhaler (DISPOSABLE)
100,000 units crystalline penicillin G sodium

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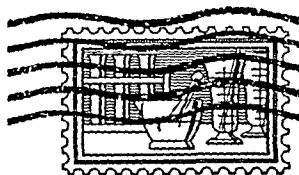
Thank you, Dean Crossen

Sirs:

This will acknowledge receipt of the plaque for award to the Student Branch of the Oregon State College School of Pharmacy for their Pharmacy Week display. We wish to compliment those responsible for the excellent piece of work done in arrangement of the plaque. I assure you that we will be proud to have it included among the displays of this school.

Corvallis, Ore.

GEORGE E. CROSSEN



Letters:

Endorse Health Information Program

Sirs:

May we thank you for the bulletins and counter cards and for the opportunity to help in publicizing the menace of cancer. I am sure that every druggist will welcome the chance to cooperate with you in warning the people in his or her community of the danger of cancer.

May we have permission to use some of the material you send in newspaper advertising over our store name?

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C. A. JONES, JR.

Sirs:

Thank you for providing the series of cancer messages and we wish to advise that they are being used to full advantage.

Boone, Iowa

W. L. HERRALD

Becomes Active Member

Sirs:

This is to notify you of my graduation from the University of Washington College of Pharmacy. In your letter sent in connection with my current membership card you stated that membership in the student branch would be transferred over to the regular list upon graduation; therefore, I am requesting that privilege. My connection with pharmacy is now with the Federal Food and Drug Administration. It is my desire to maintain my membership in the future and to offer my support to the aims of the organization. With thanks and the hope that the standards of pharmacy may be raised through our Association, I remain

Tacoma, Wash.

ROBERT E. ASMUSSEN

Opposes Issuance of Prescription Pads

Sirs:

The custom started years ago when the neighborhood druggist made the friendly gesture of supplying prescription blanks to the doctor across the way. The doctor usually reciprocated by telling his patients to take the prescription to —'s drugstore. The patient was unaware of any relations between these men. He had confidence in his family physician, so he had his prescription compounded at

the pharmacy the doctor had specified. That practice was wrong then and it is still wrong today. When you think of this situation with an unbiased mind, you can readily see that it is grossly unfair from all angles. The physician's relationship with the pharmacist should end when he prescribes some medicine. It is not within his prerogative to select the patient's pharmacist. It isn't very complimentary to the pharmacists of the community—to say nothing of being unethical and a bad business practice.

As we all know, a pharmacist is considered capable when the state board examiners issue a license to him. If then he makes a mistake, the patron has recourse through the courts, so we come to the conclusion that one pharmacist is as capable as another. Suppose there are five drugstores in a community or a township, and the near-by physician prefers to use the prescription blanks of one particular pharmacy. He has shown a preference and that idea is conveyed to the patient. Realizing the advantages of such a procedure, the physician will sometimes go a step further and verbally recommend a certain pharmacy to his patient, or telephone the prescription in to his favorite drugstore without even consulting the patient or gaining his permission. Thus he causes the patient to go to a drugstore that perhaps he does not choose to patronize. . . . Through this act he has impeded free enterprise, incurred the ill will of the remaining four pharmacists and has done an injustice to his patient. . . .

Louisville, Ky.

DEWEY STRATTON

Appreciates Services

Sirs:

I would appreciate receiving the latest N. F. supplement, as in our practice and the promotion of pharmacy it is essential to refer to the official books and latest additions.

The "New Prescription Products" section is a very practical addition to the JOURNAL, especially so because it can be removed without destroying other articles which may be good reference material.

With best wishes for successful cooperation from all members.

Jamaica, N. Y.

SISTER M. JEANETTE

achievement

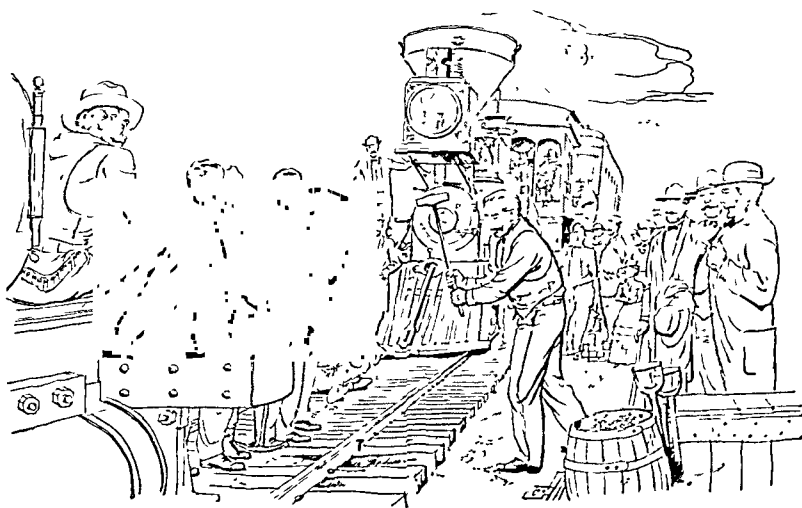
Progress in the profession of pharmacy is improving the pharmacist's position as a key factor in the nation's health. As in other professions, with success there naturally come prestige and added responsibilities.

Today, keeping abreast of medical research, disseminating accurate information to physicians and the public, and providing complete prescription service are the pharmacist's full-time obligations. Pharmacy and pharmacists will continue to grow and achieve in proportion to their acceptance of these essential functions. The Lilly medical service representative stands ready and willing to serve the pharmacist in the best interests of the profession. He works for you, never against you. That is the Lilly Policy.



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FEBRUARY, 1949

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Preliminary Convention Program

Plans for the 1949 meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION and affiliated organizations to be held at Jacksonville, Fla., are well advanced. The General Sessions, the meetings of the House of Delegates and the Sections will offer a program of interest to all members. In addition, the Convention Committee, headed by J. K. Attwood, is preparing suitable entertainment for the members and their ladies. Convention Headquarters will be at the George Washington Hotel.

As tentatively arranged, the official A. Ph. A. meetings will begin Tuesday evening, April 26,

when the House of Delegates opens its first General Session. The A. Ph. A. meetings will conclude Friday evening with the final session of the House of Delegates, followed by the final General Session.

The following program is subject to change. A detailed program listing entertainment features, group dinners and special luncheons and breakfasts will appear in the March issue of THIS JOURNAL. All requests for special features to be included in the program should be addressed to The Secretary, AMERICAN PHARMACEUTICAL ASSOCIATION, 2215 Constitution Ave., N. W., Washington 7, D. C.

TENTATIVE MEETING SCHEDULE

Sunday, April 24

Afternoon

American Association of Colleges of Pharmacy,
First General Session

Evening

Joint Meeting: Council A. Ph. A.
Executive Committee, A. A. C. P.
Executive Committee, N. A. B. P.
American Council Pharmaceutical Education

Monday, April 25

Morning

Teachers' Conferences
National Association of Boards of Pharmacy, First
Session
American Society of Hospital Pharmacists
American College of Apothecaries
Faculty Advisers of A. Ph. A. Student Branches

12:30 p. m.

N. A. B. P. Luncheon

Afternoon

N. A. B. P., Second Session
A. A. C. P., Second Session
American Society of Hospital Pharmacists
American College of Apothecaries

Evening

Joint Dinner: A. A. C. P. and N. A. B. P.

Tuesday, April 26

Morning

Teachers' Conferences
N. A. B. P., Third Session
American Society of Hospital Pharmacists
American College of Apothecaries

Afternoon

N. A. B. P., Final Session
A. A. C. P., Final Session
American Society of Hospital Pharmacists

7:00 p. m.

A. Ph. A. House of Delegates—First Meeting

8:30 p. m.

A. Ph. A., First General Session (Public Meeting)

Wednesday, April 27

Morning

A. Ph. A. House of Delegates, Second Session
Scientific Section

Afternoon

Scientific Section
Section on Education and Legislation
Section on Pharmaceutical Economics
Section on Historical Pharmacy and the American
Institute of the History of Pharmacy
Section on Practical Pharmacy
Conference of Pharmaceutical Association Secretaries

Thursday, April 28

Morning

A. Ph. A., Second General Session

Afternoon

Scientific Section
Section on Education and Legislation
Section on Pharmaceutical Economics
Section on Practical Pharmacy
Section on Historical Pharmacy and the American
Institute of the History of Pharmacy
Conference of Pharmaceutical Association Secretaries

Friday, April 29

Morning

A. Ph. A. House of Delegates, Third Session
Scientific Section, Final Session

Afternoon

Section on Practical Pharmacy
Section on Pharmaceutical Economics
Section on History of Pharmacy and the American
Institute of the History of Pharmacy

7:30 p. m.

A. Ph. A. House of Delegates, Final Session

9:30 p. m.

A. Ph. A., Final General Session
Installation of Officers

**SEE CONVENTION HOTEL RESE-
VATION FORM ON PAGE 113**

AT "A FRIENDLY CITY OF ENDLESS CHARM" . . .

JACKSONVILLE



your

American Pharmaceutical Association

convention April 24-30

AS MAYOR of Jacksonville, it is a privilege to extend to the 96th Convention of the AMERICAN PHARMACEUTICAL ASSOCIATION a most cordial welcome. Our city officials are delighted that you have made Florida's "Gateway City" your Convention choice.

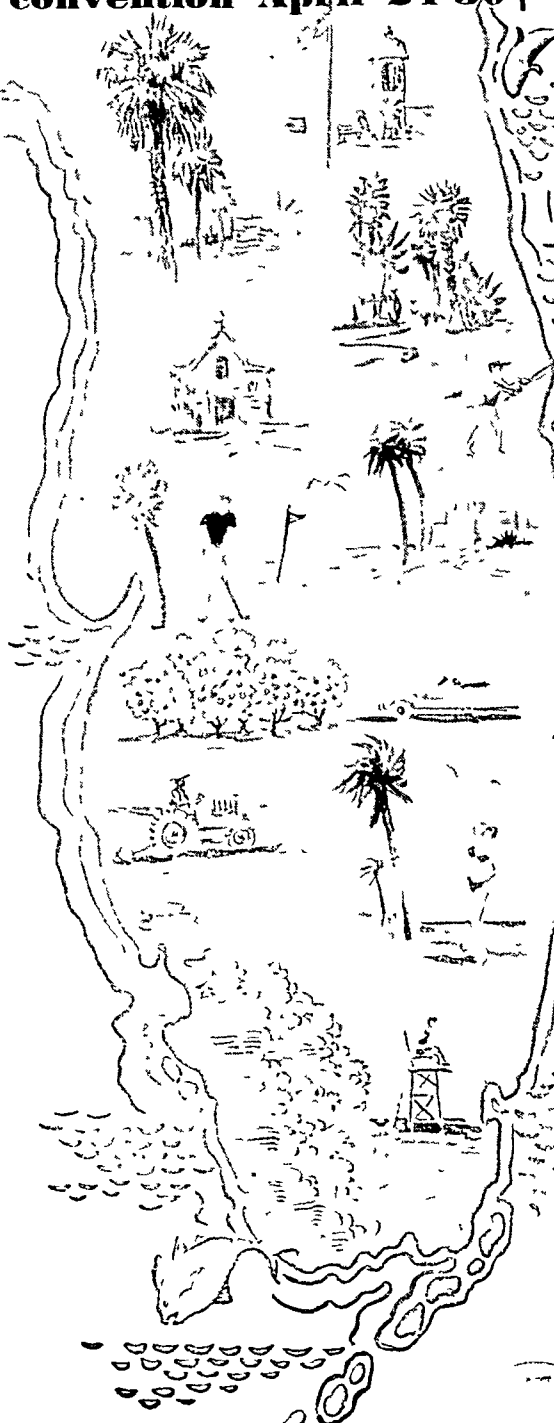
The City Hall, the Tourist and Convention Bureau and the many facilities of our city stand ready to serve you and to make your visit to Florida's industrial and financial center a happy and memorable one.

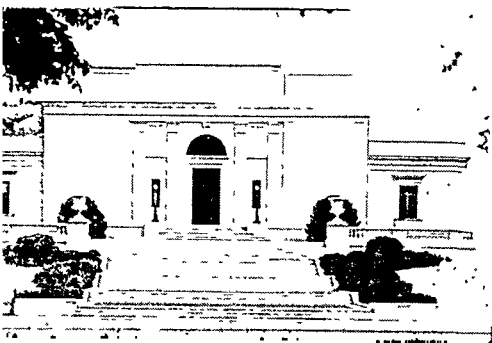
Jacksonville is proud of its tremendous and steady growth. Within a little more than a century, Jacksonville has become one of the leading industrial and financial centers on the South Atlantic seaboard. With a population of 240,000 this city continues to progress. Its many fine homes and buildings, wide streets and boulevards, thriving businesses and industrial plants all reflect this growth.

From Jacksonville's deepwater harbor, the largest on the South Atlantic Coast, pass the large ocean-going ships with cargoes from the entire southeast bound for the distant ports of the world.

While you are here, we want you to enjoy our fine ocean beaches, surf and swim in the blue Atlantic or golf beside the palm-fringed dunes beneath the warm Florida sun. From Jacksonville you can journey to St. Augustine, the nation's oldest city, to Marineland, Fernandina, and the many other historic and pleasure spots of Florida.

C. FRANK WHITEHEAD
Mayor of Jacksonville





STRAIGHT FROM HEADQUARTERS



by **ROBERT P. FISCHER**, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

Health Insurance Plans

WITH THIS issue of the *JOURNAL*, we are beginning a series of staff articles dealing with proposals for a national health program. This problem has not reached the point where all political parties, and all professional and lay groups having anything to do with medical care, are convinced that some kind of national health program will be established in the very near future.

The AMERICAN PHARMACEUTICAL ASSOCIATION believes in the ability and intelligence of its members to solve all problems bearing on the practice of pharmacy, if they are in possession of the necessary facts. The articles in this and subsequent issues of *THIS JOURNAL* are intended to keep our members thoroughly informed of developments in private and public programs for easing the payment for medical and other health services. We have watched the development of compulsory health insurance programs in various European countries and, more recently, we have been made aware of the British program which involves socialization of medical services on a very extensive scale.

We believe that it is wise for pharmacists and pharmaceutical organizations in the United States to give careful study to the procedure and implications of the systems in effect elsewhere and to give particular attention to the progress that has been made with voluntary health insurance programs in the United States.

The first of our series of informative articles on "What's Happening in the Medical Care Field" deals with President Truman's program, various views of the effect of such a program, the Blue Cross-Blue

Shield proposals, other voluntary programs and the extent of existing Federal health and medical services.

The March issue will carry a review of the British compulsory health program to the extent that information has been made available through pharmaceutical, medical and other sources.

At the moment, the President's compulsory health insurance program is being held in abeyance pending consideration of programs submitted by the American Medical Association, Senator Taft, and a number of other programs such as that of the Pennsylvania Medical Society.

It is clear that American medicine is not united with respect to the position that should be taken by the profession on this question and it is quite certain that when doctors are in disagreement there also will be disagreement among other segments of the health professions with respect to what is best for all concerned.

The public hearings on the measures now before Congress and to be introduced by proponents of various plans doubtless will open the way to compromises, and the program which will finally evolve may differ considerably from any of those now proposed.

It behooves representatives of pharmacy to keep a clear head and view with an eagle eye the proposals that are under consideration with respect to their effect upon the future of pharmacy.

Our Education Program

IN AN earlier issue of *THIS JOURNAL*, we called attention to the recommendations of the Pharmaceutical Survey with respect to the future program of education for

pharmacists. The Survey recommended continual improvement of the four-year course and projected a six-year program leading to the doctor of pharmacy degree. It did not suggest that this program become compulsory at once, but it expressed the opinion that pharmacists of the future should be trained in cultural fundamentals as well as in the technical aspects of their profession. We are told that the Curriculum Committee of the American Association of Colleges of Pharmacy has worked out a program which requires preparation for the professional subjects of the pharmacy course that will take at least two years of preliminary education on the college level. If the Curriculum Committee can see no way of outlining a pharmacy course which will require less than six years of study, it is merely emphasizing what medicine and dentistry have long ago determined.

The question before the profession of pharmacy today is not only how many years of study are required to turn out a good pharmacist, but how long does it take to educate an individual to become a competent member of the health profession team—in this instance, a pharmacist?

The fact is that medicine and dentistry require anywhere from two to four years of *pre-professional* education at the college level and if pharmacy is to be placed on the same level as medicine and dentistry, it will have to follow the educational program of these professions, at least to the extent of developing a minimum of *pre-professional* education.

Already some pharmacy colleges are requiring a minimum of one year of college preparation for the four-year professional program. The step to two years is perfectly logical and, in accordance with expert opinion on the subject, it is necessary. Let us therefore not talk about a "six-year course in pharmacy" but, rather, about a six-year program of pharmaceutical education which provides for a four-year professional course, based upon adequate pre-professional training.

If American pharmacy is to maintain its position among the health professions, it will have to go along with this program. There never was a better time in which to work it out than the present because we have never had so many applicants for admission to the pharmacy course.

Charles W. Johnson

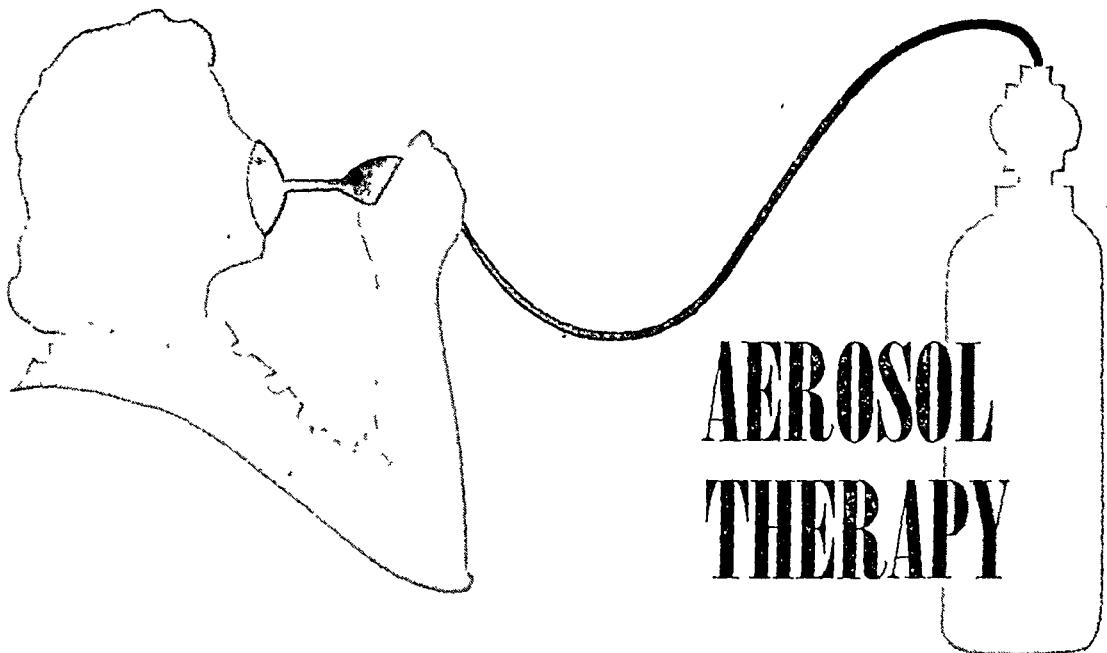
IT WAS with keen regret that we learned of the death of Dean Emeritus Charles W. Johnson of the State University of Washington. Dean Johnson was a former president of the AMERICAN PHARMACEUTICAL ASSOCIATION and left his mark on the progress of pharmacy in many ways. His major work was in the far west and for many years he was looked upon as the leader of American pharmacy in that section.

Not only was he a splendid educator and one who produced many leading teachers of pharmacy of the present day, but he was also active in the field of drug regulation. For many years he conducted the laboratory for the analysis of foods and drugs for the State of Washington and did much work for the Federal Government. He was one of Dr. Wiley's aides in the early days of enforcement of the Food and Drug Act.

Unfortunately, he was prevented from active participation in pharmaceutical affairs for many years because of a lingering illness. His great service to the people, through the advancement of pharmacy and through the development of adequate standards for foods and drugs, and the fine influence he exerted on his students and co-workers, constitute his monument.

Theodore Christianson

THEODORE CHRISTIANSON, who in his later years gave much of his time to the National Association of Retail Druggists as editor and director of public relations, was a unique figure in American pharmacy. As a member of his own profession, the law, he rose to unusual heights—having been elected to Congress and several terms as Governor of his native state, Minnesota. Probably no other individual who had occupied such high political office ever applied the same combination of experiences to the problems of pharmacy. He seemed at his best in the joint meetings of the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION and the Executive Committee of the N. A. R. D. where on many occasions he clarified issues and phrased resolutions in a manner which placed the viewpoint of pharmacy before the layman in clear and cogent terms. We join with the N. A. R. D. in mourning the loss of one who contributed much to the welfare of pharmacy.



ITS INTEREST TO THE PHARMACIST

by HERBERT M. COBE*

THE use of aerosol or inhalation therapy is not a new scientific development for as far back as there is recorded history of medical treatment, inhalation therapy has been used in some form. From ancient Biblical records and the period of the early Egyptians there are instances recorded of the use of incense and fumes in both religious services and medical practice. During the Middle Ages, chemists and alchemists and, later, the medieval barbers all used various forms of inhalations with or without incantations and sorcery. In our own country, a part of the practice of an Indian medicine man was to throw onto a fire herbs and grasses of various kinds which, when inhaled, were thought to banish devils and spirits and bring about healing. Even into modern times sorcery and witchcraft have practiced inhalations of smokes and fumes to rid the individual of evil spirits.

Throughout the Victorian era and even in the present day, when a family physician sends a patient to the seashore or to the pine woods for the "bracing effect" of the air, inhalation therapy is being utilized.

Today the field of inhalation therapy is on a more scientific basis and has come into its own as a definite form of medical prac-

tice. This form of treatment is being used more and more and therefore becomes of vital interest to pharmacy as a method for administering such drugs as: antibiotics, chemotherapeutic agents, endocrines, desensitizing agents, radiologically opaque solutions, radioactive isotopes, and various other therapeutic agents and chemicals.

Terminology

The term "aerosol" comes from the field of colloidal chemistry and means a suspension of liquid particles in a gas (usually air), a phenomenon that is familiar as fog. The terms "nebulization" and "atomization" are frequently used incorrectly as synonyms and are often used interchangeably. To nebulize means to produce a mist or cloud of minute particles whose size is 1.5 microns or less. The term "atomization" includes particles whose size is generally larger than nebulized particles. Atomized particles are extremely variable in their average diameter and may be as large as 5 microns or above. The term aerosol came into prominence and general usage during the last war due to the work of the Research Branch of the Technical Division of Chemical Warfare. The field was extended to include therapeutic aerosols and under the supervision of Dr. Harold Abramson,¹ therapeutic researches were conducted aimed at producing aerosols for treating gas casualties. At this time Dr.

* Dept. of Bacteriology, Temple University School of Pharmacy, Philadelphia, Pa.

Barach and Dr. Segal were concluding experimental work on the application of aerosol therapy to diseases of the respiratory tract.

Particle Size

Since aerosol therapy makes use of a suspension of liquid particles in a gas for inhalation treatment, the matter of particle size becomes an issue of major importance. There are many commercial nebulizers on the market today with all sorts of variations and ingenious devices for the production of mists, clouds, and sprays, but they often vary in the size of the particles delivered so that some do not conform to the definition of a nebulizer. Bryson² reported the conclusions of a study of various nebulizers at the Section on Allergy at the American Medical Association Convention, June, 1947, in Atlantic City. The results showed the variable efficiency of the commercial nebulizers available.

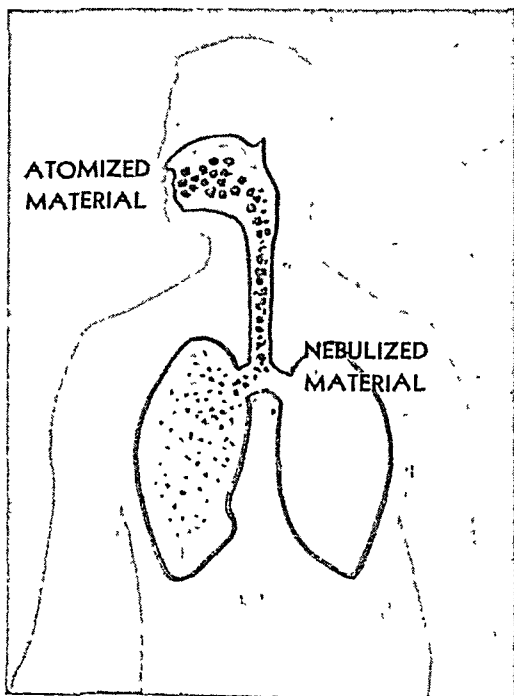
The importance of the particle size produced is relative to the portion of the respiratory tract involved. If the upper respiratory tract is to be treated, the larger particles produced by various atomizers are of value as they settle out in the form of "rain" and are impinged on the upper portion of the oral and pharyngeal mucosa. If the lower portion of the respiratory tract, such as the bronchi, smaller bronchioles or the lungs, is to be medicated, small or nebulized particles are necessary in order that they can be more readily carried down into the dependent portions of the lung field by the aerosol in which they are suspended. It has been found that the most efficient particles are those which range from 0.5 to 2.5 microns in diameter, since particles smaller than that tend to float around in the lung alveoli, do not settle out, and are frequently exhaled. It is said that particles larger than this range never reach the lower portions of the lungs. If it is desired to confine therapy predominantly to the bronchioles and alveoli, the clinician should ascertain that the nebulizer of his choice produces with 5% glycerin a fine "smoke" that floats in the air, rather than a spray capable of wetting objects placed a few inches from the orifice.¹²

Many gases have been used to make aerosols. The commonest practical material to be used is air which can be supplied by the

squeezing of a suitable hand bulb, by a low compression motor, or by the use of a simple foot pump or bellows such as the one described by Barach.³ All that is needed is the production of sufficient pressure to give complete and good aerosolization. Oxygen is probably the second most frequently used gas. It is generally administered from an oxygen supply tank controlled with various pressure regulating devices. It is used in a manner which simulates the natural flow of air into the lungs and by using from 8 to 12 pounds of pressure and allowing a flow of from 7 to 8 liters of oxygen for a fifteen-minute period, good and complete aerosolization is obtained. Treatments with this apparatus may be used for this period of time three or four times per day.

This intermittent type of aerosol therapy which has been found to be very satisfactory in this country is in contradistinction to a continuous type of inhalation therapy which is used in Europe. Helium was introduced as a therapeutic gas by Barach⁴⁻⁸ in 1934. It is used as a mixture containing 20% oxygen and 80% helium. The use of helium as an aerosol therapeutic agent has been confirmed by Metz,¹⁰ Schwartz⁹ and others.

The most recent advance in aerosol therapy has been the addition of wetting agents to reduce the surface tension, thus



PLANT SCIENCE SEMINAR POSTPONED

The Plant Science Seminar will be held at the University of Wisconsin School of Pharmacy at Madison, Wis., during the week of August 21, 1949. After considerable deliberation, the officers of the Plant Science Seminar decided against holding a Seminar prior to the 1949 Jacksonville Conventions of the American Association of Colleges

of Pharmacy and the AMERICAN PHARMACEUTICAL ASSOCIATION. Since these meetings will be held during the week of April 24, it was felt that most Seminar members would be unable to leave their duties for two weeks at that time of the year and, therefore, attendance at a Seminar in or near Jacksonville would be limited.

enabling the solutions to reach the tissues and the microorganisms more effectively.

Uses of Aerosol Therapy

While the mechanism of inhalation therapy in the treatment of systemic disease is controversial, its value in the treatment of specific localized infections of the respiratory tract has been well established. It has been found of value in the treatment of tracheitis, bronchitis, lung abscess, and bronchial asthma. Recently the field has been extended to include acute and chronic sinusitis, pulmonary tuberculosis, acute pneumonitis, and bronchospasm with and without edema. Experimental work has been conducted by Lowell and Schiller,¹¹ Segal,¹³ Barach,¹⁴ Olsen,¹⁵ and others to show the effect on vital capacity of the lungs, pollen susceptibility, and other similar conditions.

The combination of antibiotics, particularly penicillin and streptomycin, with bronchodilators has been in use for considerable time and with remarkable success particularly in the treatment of disease conditions of bacterial origin, such as infectious bronchial asthma and the pneumonias. Variations in dosage are frequently responsible for variations in the cures effected and when other things have been equal the dosage becomes of great importance. As reported by Garthwaite,¹⁶ total daily dosage is from 150,000 to 500,000 units in bronchiectasis, chronic bronchitis, and lung abscess. It is questionable whether there is any advantage to smaller doses given more often.

It is not a matter for discussion here whether the action of the antibiotics by inhalation is local or systemic; differences of opinion are varied as noted by Levine¹⁷ and by the studies of Segal and Ryder.¹³

The value of the blood levels attained by inhalations of penicillin are still in a debatable state but as an index of absorption they have an unquestioned place. If the method

of action is a purely local or topical one then the place of aerosol therapy in the treatment of respiratory conditions is beyond question.

Antibiotics which have been used either alone or in combination with detergents or bronchodilators have been gramicidin, bacitracin, tyrothricin, penicillin, and streptomycin. The results have been varied due to concentrations of the antibiotics used and the nebulizer which administered them. Penicillin has been inhaled as a powder as well as from a solution.

Other materials which have been used by this method have been hydrogen peroxide and the sulfonamides. These have been especially effective in pre- and postoperative surgery of the chest and lung.

There have been many other types of apparatus constructed for the treatment by this route of the various portions of the respiratory tract. These include masks, tents, positive-negative pressure apparatus, and various types of demand valves. More are in process of design and construction.

For the pharmacist whose practice is constantly growing and meeting changing conditions, it is essential to know and understand the most recent developments in these fields. The surface has only been scratched and there will be many changes and improvements in the near future.

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April
24 to 30

Your Pharmacy Week Display

APRIL 24-30 will mark the 24th anniversary of National Pharmacy Week. This event, founded in 1925 by Robert J. Ruth, is observed each year by pharmacists as a rededication to their professional ideals.

Dr. Ruth, who during his long career served as a retail pharmacist, an educator, and finally as chief of the pharmaceutical division of one of the nation's largest pharmaceutical houses, first suggested National Pharmacy Week in his chairman's address before the Section on Practical Pharmacy and Dispensing of the AMERICAN PHARMACEUTICAL ASSOCIATION at the 1924 annual meeting. He served as chairman of the National Pharmacy Week Committee from 1925 until his death in 1931.

Nationally Important Program

Since 1925 National Pharmacy Week has been of growing significance to the practicing pharmacist. However, beginning with the 1947 observance, National Pharmacy Week has more nearly fulfilled the anticipations of Dr. Ruth for a week devoted to public health information. In 1946 the House of Delegates of the AMERICAN PHARMACEUTICAL ASSOCIATION authorized the development of a broad and extensive plan to identify Pharmacy Week as a nationally important program of public health education through the pharmacy.

In 1947, with the cooperation of the American Cancer Society, the observance was dedicated to the cancer control program. Pharmacists throughout the nation disseminated much information by distributing literature concerning the control of cancer and by installing window displays devoted to the fight against the dread disease.

In the summer of 1948 the year 'round public health program was inaugurated and, with the cooperation of the Cancer Institute,

U. S. Public Health Service, regular bi-monthly mailings of informational material have been made by the ASSOCIATION to 12,000 participating pharmacies. This program will continue until this summer, at which time another cooperative endeavor will be arranged with a selected agency concerned with a major health problem.

1949 Observance

As instructed by the delegates to the San Francisco convention of the AMERICAN PHARMACEUTICAL ASSOCIATION, the Public Relations Committee completed arrangements again with the American Cancer Society to make public education on cancer control a theme of the 1949 observance. The continuing urgency of the cancer control program, plus the value of coordinating the Week with the current year 'round cancer information program, will again make the observance important to the public as well as to the profession.

Official Display Piece

The Public Relations Committee urges the participation of every pharmacist during April 24-30. During February, a mailing will be received by every pharmacy in the United States. This material outlines the program and includes a pledge card that must be returned to the Public Relations Committee as a request for a window display and leaflets for use during Pharmacy Week.

The colorful display piece, 30 by 40 inches, on card stock, will be delivered ready for installation if the pledge card is returned. There is no charge for Pharmacy Week participation materials. Chairman Tom D. Rowe of the Public Relations Committee emphasizes, however, that the number of pledges returned will determine the number

of displays and other free participation materials to be produced. Since the pledge cards will also be used as a mailing list to deliver materials, he points out that it is of the utmost importance for pharmacists to sign and mail the pledge card promptly upon receipt.

Other Participation Material

Participation material other than the display should be ordered with the coupon appearing on page 95. Basic material offered last year has been revised for the 1949 observance. Supplementing the use of this material locally, there will be national recognition of the Pharmacy Week program by the press, radio and government officials.

All pharmacists are urged to enter a photograph of one of their National Pharmacy Week displays in the national competition. Official rules appear on page 93. The committee suggests that local groups arrange a photographic service for their members to encourage participation for the Robert J. Ruth trophy and other awards.

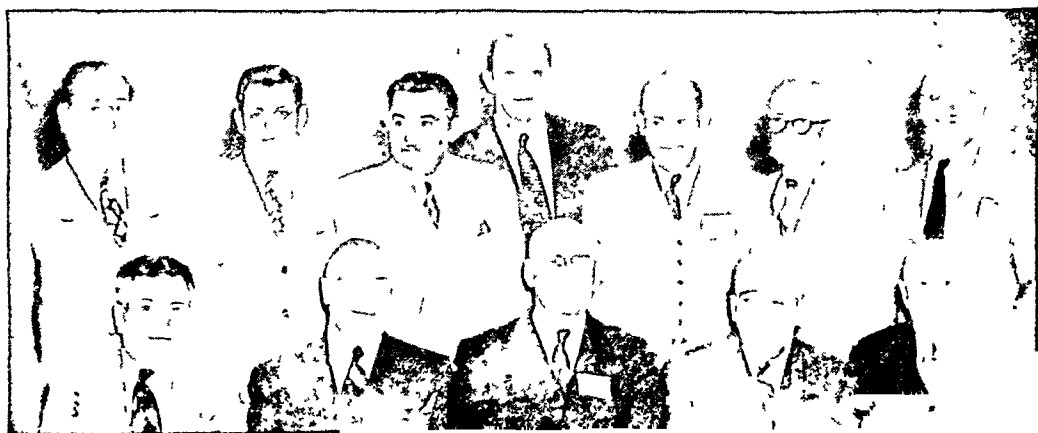
State and local associations and A. Ph. A. branches will enter displays installed in

public places other than a pharmacy for the special public exhibit awards. Individual pharmacists may also enter this division of the competition. As in former years, separate awards will be made for displays installed by pharmacy students.

No changes in the competition rules have been made this year. However, the Committee again wishes to point out that the rule against commercial advertising in National Pharmacy Week displays or exhibits has been clarified by indicating that this does not apply to labels on drug or other professional products that may be included in displays. In the rules for college competition it has again been made clear that displays installed by students in a public place other than a pharmacy college may qualify.

Because of inquiries made last year, the committee points out that a cancer-control display theme is not required for eligibility in the competition. It is hoped, however, that every pharmacy participating in the observance will install a display using the official material. The pharmacist may enter either a display built around the official display, carrying out the cancer control theme, or another professional pharmacy display—whichever he feels is more effective.

A. Ph. A. Council Members



A. Ph. A. Council members in attendance at the San Francisco convention of the Association. Seated (l. to r.) are: Glenn L. Jenkins; Martin E. Adamo; Ernest Little, A. Ph. A. president; George D. Beal, chairman of the Council; and Robert L. Swain. Standing (l. to r.) are: B. V. Christensen; Don E. Francke; Hugo H. Schaefer, A. Ph. A. treasurer; Robert P. Fischelis, A. Ph. A. secretary; Mearl D. Pritchard; Hans S. Hansen; and Frederick D. Lascoff. Other members of the Council not present when this photograph was taken include: H. A. B. Dunning, Sylvester H. Dretzka, George A. Moullon, and Bert R. Muil.

Rules For National Pharmacy Week Display Competition

▼ General

1. Pharmacy Week exhibits or window displays should inform the public of the professional character and service of pharmacy.

2. Photographs of Pharmacy Week exhibits or displays will be judged on the basis of:

- (a) Value and effectiveness of the message to the public.
- (b) Originality.
- (c) The professional character, arrangement, and details of the display.

3. Pharmacy Week exhibits or displays containing any commercial advertising, other than labels on products, will not be accepted in the competition.

4. Pharmacy Week displays that have been entered in former years are ineligible.

5. Photographs must be of displays that were installed on or before the beginning of Pharmacy Week and remained on display for at least the entire period of National Pharmacy Week, April 24-30, 1949.

6. Photographs submitted should be 8 by 10 inches in size, or some other suitable size that will permit the judges to study details of the display. Glossy prints are preferable.

▼ Retail Pharmacy

1. General Rules 1 to 6, inclusive, apply to this competition, which is limited to displays in retail pharmacies.

2. Photographs of displays must be submitted to the secretary of the respective state pharmaceutical association on or before May 30, 1949, labeled on the back of the photograph as an entry in the Retail Pharmacy Competition.

3. Each state association shall appoint a judging committee before May 30, 1949, and this committee will meet and select the best display within the state. A photograph of that display shall be mailed to the Public Relations Committee, 2215 Constitution Avenue, N. W., Washington 7, D. C., not later than June 30, 1949. Entries mailed after that date will not be accepted in the national competition.

4. Only the state winner from each state may be entered in the national competition.

5. As soon as possible after June 30, 1949, a national committee of judges will select the best six

displays from the states. The best display in this group will be awarded the Robert J. Ruth Trophy and the others will be awarded certificates of merit.

▼ Public Exhibit

1. General rules 1 to 6, inclusive, apply to this competition.

2. Displays or exhibits in the Public Exhibit Competition must be installed in a public place other than a retail pharmacy or pharmacy college. One entry may be submitted by any pharmacist or group of pharmacists, including hospital and retail pharmacists, state and local associations, and A. Ph. A. local branches.

3. Photographs of exhibits or displays must be submitted to the secretary of the respective state pharmaceutical association on or before May 30, 1949, labeled on the back of the photograph as an entry in the Public Exhibit Competition.

4. Each state association shall appoint a judging committee before May 30, 1949, and this committee will meet and select the best exhibit or display within the state. A photograph of that display shall be mailed to the Public Relations Committee, 2215 Constitution Avenue, N. W., Washington 7, D. C., not later than June 30, 1949. Entries mailed after that date will not be accepted in the national competition.

5. Only the state winner from each state may be entered in the national competition.

6. As soon as possible after June 30, 1949, a national committee of judges will select the best three displays submitted. The best display in this group will receive the A. Ph. A. Award, which shall be a suitable trophy, and the others will receive certificates of merit.

▼ Pharmacy College

1. General Rules 1 to 6, inclusive, apply to the college competition, which is limited to displays or exhibits planned and installed by pharmacy students at the college or other public place.

2. Only one photograph from each college may be entered.

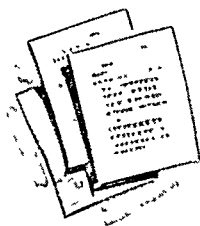
3. Photographs of displays shall be mailed to the Public Relations Committee, 2215 Constitution Avenue, N. W., Washington 7, D. C., on or before June 30, 1949. Entries mailed after that date will not be accepted in the competition.

4. As soon as possible after June 30, 1949, a national committee of judges will select the best three displays from the colleges. The best display in this group will receive the A. Ph. A. Award, which shall be a suitable trophy, and the others will receive certificates of merit.

Participation Aids for NATIONAL PHARMACY WEEK April 24-30

NATIONAL Pharmacy Week, April 24-30, will again show the pharmacist in action to meet U. S. health problems—working in his community to help control cancer. And it will also include the more traditional features that interpret pharmacy's basic professional service to the public. The program has its roots in the corner pharmacy, where there must be cooperation with national endeavors to make the observance fully effective.

The participation aids listed on these pages have been prepared by the Public Relations Committee of the AMERICAN PHARMACEUTICAL ASSOCIATION for local pharmacists and pharmaceutical organizations. Among the new materials offered are National Pharmacy Week mats for newspaper use, which tie in with the pharmacist's official display piece and other educational work on cancer control. Basic material offered last year has been revised for 1949 use. Supplementing local use of these participation aids there will be national recognition of the Pharmacy Week program by the press, radio, and government officials. Pharmacists are urged to check their needs on the coupon on the opposite page and mail it today.



ADDRESSES

1. Behind the Scenes in Your Corner Pharmacy
2. The Search for Drugs Against Disease
3. The Romance of Foxglove (especially suitable for garden and botanical clubs)
4. Famous Discoveries by Famous Pharmacists
5. The Pharmacist—Then and Now
6. Drugs of the Scriptures (especially suitable for church groups)
7. Reflections on the Pharmacist's Show Globe
8. The Pharmacist in Literature (especially suitable for literary clubs)
9. Pharmacy Through the Ages
10. The Hospital Pharmacist—Unseen but Essential
11. Pharmacy—A Modern Career in the Health Field (especially for high-school groups)



RADIO

12. The Search for New Drugs (15-minute script; one person and the announcer)
13. The Prescription That Shook the World (15-minute dramatic script; cast of 5 male voices, 2 female voices)
14. New Drugs in the Pharmacy (15-minute script; two persons and the announcer)
15. Knowing the Facts Saves Lives (5-minute script; one person and the announcer)
16. A Visit with Your Pharmacist (5-minute script; one person and the announcer)
17. Series of professional spot announcements



ADVERTISING · MATS

18. National Pharmacy Week newspaper mat, 3-column, 7 inches (15 cents)
19. National Pharmacy Week newspaper mat, 2-column, 7 inches (15 cents)

PARTICIPATION GUIDE

20. Participation Guide (contains display suggestions, professional copy for advertisements, suggested news story and editorial, model proclamations for local officials)

DISPLAY REPRODUCTIONS

21. Reproductions of some former Pharmacy Week displays

DISPLAY MATERIAL

The official display piece, and leaflets for distribution, may be ordered separately on the request card that each pharmacy will receive in February in a direct mailing.

TO:

Public Relations Committee
AMERICAN PHARMACEUTICAL ASSOCIATION
2215 Constitution Ave., N. W.
Washington 7, D. C.

Please send the National Pharmacy Week material indicated by the numbers encircled below. It is understood that any three items will be supplied without charge, except advertising mats which are 15 cents each. Ten cents is enclosed for each item in excess of three items. Any 12 items plus advertising mat will be supplied for \$1.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21							

Name.....

Address.....

City.....Zone.....State.....

What's Happening in the Medical Care Field

*M*ANY of the current developments in the medical care field have implications for pharmacists. In view of President Truman's campaign speeches and a Democratic majority in both Houses of Congress,

some legislative action on medical care likely will be taken by the 81st Congress. This article presents a summary of important developments or proposals with some description of the conflicting points of view.

A COMPULSORY HEALTH INSURANCE PROGRAM

The New Bill

Senator Murray has introduced a new bill, S.5, which is similar in form to the Senate Bill 1320 which he sponsored in the last Congress. It has been referred to the Senate Committee on Labor and Public Welfare whose membership is more favorably disposed to such legislation than was the 80th Congress Committee which held hearings on S.1320.

Senators Murray, Wagner, and McGrath and Congressman Dingell have issued a joint statement which describes S.5 as follows:

1. It will cover 85% of the population, including the self-employed and their dependents;

2. It will guarantee to participants medical and dental services by general practitioners and specialists, hospital and home nursing care, laboratory service, X-rays, expensive prescribed medicines, eyeglasses, etc.;

3. It will guarantee free choice of physician and dentist by the patient, also the right to change;

4. Participation by doctors, nurses, and hospitals, including organized groups of practitioners and consumer cooperatives, will be optional and "every hospital that participates is guaranteed freedom from governmental supervision or control";

5. The method of payment from the insurance fund "is to be decided by those practitioners who furnish the service";

6. Members of the medical profession may participate, along with other citizens, in administration of the plan at the local level.

Pharmacists will note with especial interest the guarantee, in point 2, of "expensive prescribed medicines."

Ewing's Description of the Program

Federal Security Administrator Oscar Ewing told state health officers at a Washington meeting shortly after the November elections how he thought such a system would work. In each community, he said, each doctor would decide whether or not he wanted to practice under the system. If he decided he did, he and other like-minded doctors would get together with the local committee set up to administer the system.

"This Committee would operate on a strictly decentralized basis, much as our local draft boards operated during the war. The doctors would sit down with the committee and work out a basic set of service fees—so much for an ordinary office visit, so much, let us say, for a tonsillectomy, so much for delivering a baby. These fees would be agreed to as a fair and reasonable scale for the community for which they were set.

"Then, each person covered by the insurance would select his own physician. The physician would decide whether or not he wanted that particular patient. If, later, either wanted to renege on his choice, he would be free to make the change. The only difference between the insurance system and the present system is that the doctor would receive his fees out of the general fund, rather than through the somewhat painful process of collecting it from his patient."

Mr. Ewing said the basic problem was how to provide adequate medical care for some 68,000,000 people living in families where the total income is less than \$3000 a year. He said an average family of four or more persons with that income cannot pay for medical care on the present fee basis. The National Health Assembly agreed that some kind of insurance was the answer to this problem. However, the members of the Assembly did not agree as to whether voluntary insurance or a national compulsory insurance system would provide the best answer. Mr. Ewing said the chief drawback to voluntary insurance was that those who needed it most could not afford it. "The voluntary method would have to operate on a standard charge—the same for everybody. Most standard charges would inevitably be too heavy a burden on the lower-income groups. Under national health insurance the cost varies with the amount of the income of the beneficiary—on a small percentage deduction from his weekly pay envelope."

Medicines Under the Health Program

Answering a series of questions submitted to him by the *American Druggist* (January, 1949), Mr. Ewing said that he did not believe it would be necessary, under national health insurance, to establish an approved list of drugs from which doctors must prescribe. On the contrary, he thought that the doctor should be completely free to prescribe any drug that he chose. He said that "National Health Insurance will not interfere in the slightest degree with the citizen buying whatever he pleases at his drugstore." And, finally, when asked who will fix the price for filling a prescription and who will pay the pharmacist for this, he

said: "Prescription prices will be determined by the same method by which doctors' fees are set. Pharmacists will meet with the administrative officers and agree on a fair price scale. I venture the opinion that there will be national discussion and agreement, possible state-wide agreement, and finally, locally adjusted scales. Payment for prescriptions will be made from the insurance fund."

However, Dr. Morris Fishbein of the American Medical Association took a different view in answering the same questions. He said: "Whereas many plans begin with the intention of authorizing unlimited prescribing, they invariably end with a restricted list. In England such restriction is already being discussed although the plan is only six months old. In Rumania, it is reported, the government sickness insurance doctor has a choice of about eight prescriptions." He continued: "In restricting prescribing, first to suffer are trade-marked prescription specialties, soon self-medication proprietaries are eliminated." Dr. Fishbein said that the government would fix the price for filling a prescription and the government would pay the pharmacist under a compulsory health system.

As the A. M. A. Views the Program

The American Medical Association at its Interim Session which met in St. Louis in December reaffirmed its belief in the principle of voluntary medical care insurance and declared: "Compulsory sickness insurance, notwithstanding misleading bureaucratic propaganda, is a variety of socialized medicine or state medicine and possesses the evils inherent in any politically controlled system."—*J. Am. Med. Assoc.*, 138, 1099 (1948).

Accordingly, the House of Delegates voted to assess each member \$25.00 to provide a special fund "to educate the American people as to the nature of medical practice in the United States, as to the services rendered by the medical profession and as to the program of the American Medical Association for extending medical research and medical care."—*J. Am. Med. Assoc.*, 138, 1230 (1948). A special committee—the Coordinating Committee for the Protection of the People's Health—composed of mem-

bers of the Board of Trustees and of the House of Delegates has employed the firm of Whitaker and Baxter of California as special public relations counsel to prepare

a program of education. This firm had previously acted as counsel for the California Medical Association in the discussion of compulsory insurance in California.

THE BLUE CROSS-BLUE SHIELD PROPOSALS

At the same St. Louis session the A. M. A. voted down Dr. Paul R. Hawley's proposal—or the proposal of the Associated Medical Care Plans—to form a national insurance company for more effective interstate operation of voluntary insurance plans. Dr. Hawley, who heads the Blue Cross-Blue Shield plans, has argued that organized medicine must be willing to help with the development of voluntary prepayment medical care plans or must expect that compulsory insurance will be forced on them. He said that a national insurance company is necessary to underwrite "large national accounts." Such accounts are defined as "firms which have groups of employees in areas not served by a single plan." Dr. Hawley pointed out that there are over 10,000 national employers and that within the last two or three years Blue Cross has competed and lost in the bidding for the coverage of 22 of these employers who have a total of 214,450 employees. These companies chose commercial insurance instead of the nonprofit plan. And in the same period, "Blue Cross has lost 42 accounts of national employers, which they previously had."—*J. Am. Med. Assoc.*, 138, 1168 (1948).

The proposed organization to be called the Blue Cross-Blue Shield Association, Incorporated, was to have provided mecha-

nisms for aiding plan enrollments, for collecting and interpreting experience data for all plans, for underwriting and actuarial service for all plans. It was also to have organized the Blue Cross-Blue Shield Health Service, Inc., as a stock insurance company to furnish coverage to employees of national firms where approved plans do not exist, to handle enrollment, billing and collection of nationally enrolled groups, and to provide uniform rates and benefits and uniform regulations for employees of such groups regardless of their place of residence.

The opposition to this plan, according to the *New Engl. J. of Med.* 238, 1006 (1948), was based on the fear "that centralization of organization entails centralization of authority, that this country's cherished heritage of free enterprise would be placed in jeopardy, and that an organization for the control of medical practice would be ready at hand for the government to take over at will." The House of Delegates gave as its main reason for voting down the proposal the possibility of Department of Justice action against such an association. It favored, instead, the formation of a national enrollment agency to cooperate in coordinating all prepaid health insurance plans. Such an agency would not be limited to sponsoring Blue Cross and Blue Shield plans alone.

A PROGRAM WITHOUT COMPULSORY INSURANCE

A number of people who oppose compulsory health insurance fear that such legislation may be approved unless constructive action is taken to remedy some of the faults in the present distribution of medical care. They believe that the A. M. A. has a great responsibility to use some of its funds obtained by assessment to devise ways to improve medical care. They fear that a mere defense of the *status quo* by the A. M. A. will lead to the adoption of a compulsory system because there seems to be no other alternative.

Hence, some people propose a disability or sickness insurance system which would

pay a weekly sum to people disabled by sickness. This would give a wage earner some money with which he could buy medical care when he needed it most.

Increase of and improvement in the voluntary medical care plans are also urged. Ways in which these plans can serve the low-income groups need to be worked out. In a speech before the American Public Health Association in November, Mrs. Agnes Meyer said: "The fear of sickness and the high cost of modern medical care must be lifted from the minds of our people. To achieve this the medical profession must throw itself wholeheartedly behind all co-

operative insurance plans whether for medical service or hospitalization. The local medical societies must encourage instead of blocking the efforts of the Blue Shield to establish standards and to develop complete coverage of medical service."

At the same time she said: "Advocates of the Murray-Wagner-Dingell bill should never lose sight of the hard truth that a national compulsory insurance program supplies merely organization and money but does not supply hospitals, doctors, nurses, dentists, and the essential personnel."

To preserve flexibility and to avoid over-centralized plans, she suggested that each community form a citizen's council for

health to assess its own needs and to develop methods for meeting these needs. Such councils could make sure that local health departments were strengthened and that sound preventive health programs were carried out.

To develop our hospital system so that its services are available to all and to finance this development she suggested that local governments should pay the total cost of the care of the indigent. Then the hospitals, relieved of the heavy costs of free care, could use their endowment funds and other financial resources to reduce charges considerably for the lower and middle income groups.

EXISTING FEDERAL HEALTH AND MEDICAL SERVICES . .

How Big Are They?

Few of us realize how big the federal government's health and medical services already are. At present one out of every six persons receives some free medical care from the government. Included in the approximately 24,000,000 Americans now getting government medical care are members of the armed forces and their dependents, veterans with and without service-connected disabilities, and merchant seamen.

This existing program of government medical service is expensive. In 1948 it cost about one and one-quarter billion dollars. In 1949 the Veterans Administration alone will spend as much as this for health and medical services.

Hoover Commission Report

The figures cited above are taken from a report issued by the bi-partisan Commission on Organization of the Executive Branch of the Government. This is commonly called the Hoover Commission because it is under the chairmanship of Herbert Hoover.

The Commission was established by the last Congress but is reporting to the new 81st Congress. Some of its findings and suggestions will probably be used in the debate about a national health insurance system. Some of its recommendations may well influence legislation of interest to pharmacists. This would be true, for example, of proposed changes in the medical care of veterans.

The report says that the quality of the government medical care varies. It is "excellent" in some places and not so good in others. The lower quality of medical care comes as a result of the lack of over-all central planning. Small Army and Navy hospitals, for example, unable because of their small size and staffs to give the best medical care, exist close to large government hospitals with empty beds. Yet these large hospitals are well staffed and equipped to give excellent care.

Parallel hospital systems are being expanded, with little coordination, by the Veterans Administration, the Public Health Service, the Army, the Navy and the Air Force. In San Francisco, for example, each service has one or more hospitals, making a total of 13. These have a capacity of 9900 beds but only 4200 patients. Seven of the 13 hospitals could be closed. Instead, more are being built with federal funds.

The Veterans Administration has a hospital construction program that will cost \$1,100,000,000. This program conflicts with the government's policy under the Hill-Burton act of aiding nonfederal hospitals in order to strengthen the hospital system of the country as a whole.

Medical manpower is now so short that a draft of doctors may be necessary to fill the Army's estimated needs. But well over half the armed forces' medical man power in the New Orleans area alone could be saved by unified hospital planning, and better care

could be given military personnel, the report states.

What Should Be Done?

Inconsistencies in hospital construction programs should be ended. Federal cases should be placed in nonfederal hospitals on a reimbursable basis wherever it is efficient to do so. Where facilities do not exist, they can be constructed on a grant-in-aid basis with much less cost to the federal government than by direct construction and operation. The average total cost of construction per hospital bed for private hospitals is about \$16,000, the report says, whereas in federal hospitals it is between \$20,000 and \$30,000. And such a policy would tend to relieve the financial difficulties of private hospitals.

Government hospitals should be put under a unified plan, the commission believes. Medical services in the armed forces should assign responsibility in each overseas area to one service which would give hospital care for all. A National Bureau of Health should have charge of all general hospitals of the Armed Services, the Veterans Administration hospitals and outpatient service in the Regional Offices, and the hospitals of the Public Health Service. This would save nurses as well as doctors.

A unified supply system for medical items is recommended. It would bring about great savings and it is a necessary medical precaution in case of war. Medical supply could be a responsibility of one of the Armed Services which could also supply other government medical needs. Or the National Bureau of Health could procure supplies for all with the aid of armed forces personnel.

A new medical service for the federal government should be organized. The report proposes that medical personnel of the VA hospitals, the commissioned personnel of the Public Health Service, and all medical personnel employed under Civil Service should be transferred to this new service.

National defense demands the best use of medical manpower, the report points out. Where atomic warfare is a potential threat, medical practitioners should not be taken from their home communities. They are needed there for civilian defense. Hence, reorganization of the existing health and medical services is vital.

VICE-PRESIDENT OF THE A. PH. A.



F. D. LASCOFF

FREDERICK D. LASCOFF, practicing pharmacist of New York City and president of the firm of J. Leon Lascoff & Son, Inc., is the second vice-president of the AMERICAN PHARMACEUTICAL ASSOCIATION for the 1948-1949 term. Born in

New York City and educated in its public schools, he obtained the B.A. degree from Columbia College; the B.Sc. from Columbia University School of Business, and the Ph.G. from Columbia University College of Pharmacy. He also holds an honorary Ph.D. from the Connecticut College of Pharmacy. Upon graduation from the College of Pharmacy, Dr. Lascoff entered the firm founded by his father, the late Dr. J. Leon Lascoff. From 1925 to 1945 he was on the faculty at Columbia University College of Pharmacy, and in 1915 was elected to the board of trustees, on which he now serves as third vice-president. Since 1944 he has been a member of the New York State Board of Pharmacy and is now president.

Dr. Lascoff is prescription editor of *Drug Topics* and *The New York Physician*. He is past-president of the alumni association, Columbia University College of Pharmacy, American College of Apothecaries, New York County Pharmaceutical Society, N. Y. Branch of the A. Ph. A., and a member of the N. A. R. D. and the N. Y. State Pharmaceutical Association. He joined the A. Ph. A. in 1929 and is a life member.

VA Expands Pharmacy Program

Privately owned pharmacies and those operated by Veterans Administration filled a total of some 4,000,000 prescriptions for veteran-patients during 1918, VA's pharmacy division estimates.

About half a million of the prescriptions were filled by 25,000 privately operated pharmacies throughout the country, taking part in the VA home-town pharmacy program.

The remaining 3,500,000 prescriptions were filled by 333 pharmacists in VA hospitals, homes and regional offices. VA pharmacies, in addition, supplied large amounts of routine medications to surgical and medical services in the hospitals.

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public's health--



your first concern



CANCER OF THE LOWER BOWEL

No. 8 in a Series

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DURING the past few decades treatment of early cancer of the lower bowel—the colon, sigmoid, and rectum—has made enormous strides. In the memory of living physicians the prospect of cure has changed from very poor to good. The fact remains, however, that many lives continue to be lost because the surgeon is so often confronted not with early cancer but with advanced cancer.

Following onset of cancer of the lower bowel, an average of eight months elapses before the patient visits a physician's office. Time lapses of a year or more are not infrequent. Thus, the key to controlling cancer of the lower bowel is reduction of the time lapse. It is here that pharmacists can play a significant part because persons in the initial stages of cancer of the lower bowel may be likely to turn to the pharmacist rather than to the physician.

Although a malignant growth in this part of the body usually produces symptoms even in the early stages, to most people they seem too unimportant to warrant a physician's attention. Considerable time is often lost because of resort to self-medication. When the symptoms are suggestive of cancer the pharmacist has a responsibility to urge the inquirer to visit a physician rather than rely upon cathartics or other simple remedies.

The most common sign of early cancer of

the lower bowel is a change in bowel habits. In people who have always been somewhat constipated, cancer at this site frequently increases the constipation. In persons who have had no previous tendency toward constipation, the cancer may result in difficulty of bowel movement. If the cancer ulcerates, the difficulty may decrease, resulting in three or more daily movements without a cathartic. Such changes in bowel habits, particularly after age 40, should not be attributed to minor ailments until the possibility of cancer has been definitely ruled out by a physician.

Another symptom frequently associated with cancer of the lower bowel is passage of blood, which may be bright red, dark, or mixed, depending upon the location of the tumor. Any bleeding from the rectum, with or without a previous history of hemorrhoids, should be investigated by a physician, since the presence of hemorrhoids or other minor lesions does not preclude cancer.

Other signs that may occur with cancer of the lower bowel include persistent abdominal discomfort, fatigue, weight loss, and anemia. Sometimes there is a sense of pressure in the pelvis. Occasional gas pains, unaccompanied by other symptoms, are not significant.

The important thing to remember about changes in bowel habits or blood from the rectum is that they may be the only warnings that are given in the early stages. To wait for additional symptoms is to risk fatal delay. By helping to prevent that delay the pharmacist can perform a notable health service.

Robert Helig Library



THE U. S. P. XIII monograph on aromatic elixir specifies that the alcohol content should be 22 to 24%. The formula directs that to make 1000 cc. of elixir, 12 cc. of compound orange spirit be dissolved in sufficient alcohol to make 250 cc., mixed with 375 cc. of syrup, made up to 1000 cc. with distilled water and filtered with talc.

The compound orange spirit introduces 8 cc. of absolute alcohol. The 238 cc. of alcohol required to make up to the directed 250-cc. volume introduces 226 cc. of absolute alcohol. The total absolute alcohol introduced, therefore, is 234 cc. or 23.4% by volume. As pointed out by Sperandio and Lee,¹ numerous workers have emphasized the time-consuming filtration involved. There will always be a loss of alcohol incident to this operation. Consequently, save



Aromatic Elixir

BY

CLARE OLIN EWING,
ORVAL R. KRONE and
CHARLES W. WHITE

for a gross error, it would be impossible ever to have a finished elixir containing as much as 24% absolute alcohol. If the present formula, which has been official through the last four revisions of the U. S. P., is to be retained the alcohol limits in the U. S. P. should be placed at 21 to 23%.

Sperandio and Lee point out also that the formula has been criticized because it is too sweet and its alcohol content is too high to be used as a vehicle in certain instances. They propose a modified formula to minimize the manufacturing difficulties and to reduce the alcohol, although the sweetness is not modified in their formula. If their criticisms are valid, the proposed formula does provide a very rapid technique for small-scale manufacture. However, laboratory experiments with the proposed formula indicate that it could be advantageously amended to clarify certain points in the interest of uniformity of manufacture by different pharmacists.

The formula directs the use of 50 Gm. of calcium phosphate. While both dibasic calcium phosphate U. S. P. and tribasic calcium phosphate N. F. are equally satisfactory for the purpose, dicalcium phosphate naturally would be the filter aid to be used. We have found that 50 Gm. of dicalcium phosphate will retain in the filtering operation as much as 50 cc. or more of the recommended 25% alcohol, depending on its fineness of subdivision. This is considerably more than one would expect and is a factor of considerable importance when one is dealing with large quantities incident to large-scale manufacture. We have found that 35 Gm. of dicalcium phosphate is adequate for making aromatic elixir by the Sperandio and Lee procedure.

Their proposed directions read "Pass 650 cc. of 25% alcohol solution through the filter," after which 375 cc. of syrup is added to complete the elixir to a theoretical yield of 1000 cc. These directions are not sufficiently explicit and are subject to two interpretations. If the directions mean that 650 cc. of filtrate should be obtained, the finished volume will be 1025 cc. If the directions mean that 650 cc. of 25% alcohol is the amount to be added through the filter, the yield by the proposed formula would be variable, depending upon the physical character of different lots of dicalcium phosphate but would be somewhat less than 975 cc. In

Submitted by Clare O. Ewing and associates, Control Laboratories, Rexall Drug Company, St. Louis, Mo.

neither case will the yield be 1000 cc., which is their indicated yield. Depending upon one's interpretation of the Sperandio and Lee formula, we have found in the laboratory that the alcohol content of the finished product could be as low as 14%. This approaches dangerous limits from a stability standpoint, particularly when a product manufactured on a large scale is subjected to the vicissitudes of commerce.

Modified Formula

We suggest that greater uniformity of manufacture would be attained by different pharmacists if the formula were to be modified as follows:

Compound orange spirit U. S. P.. 12 cc.
 Calcium phosphate U. S. P..... 35 Gm.
 Syrup U. S. P..... 350 cc.
 Alcohol U. S. P.
 Distilled water, of each,
 enough to make..... 1000 cc.

Thoroughly mix the compound orange spirit with the calcium phosphate in a mortar, and transfer the mixture to a filter paper which previously has been wetted with a 25% solution of alcohol. Next pass through the filter a 25% solution of alcohol sufficient to produce 650 cc. of filtrate. (About 685 cc. will be required.) Finally add the syrup to the clear filtrate and mix well.

Simple elixir produced by this formula will contain 16% of absolute alcohol by volume. This will overcome the reported objection that the present alcohol content (about 22-23%) is too high. While the reduction in sugar content of about 7% is small, it is in the direction of lessened sweetness to which objection also has been made. Nevertheless, this slight reduction does permit a finished product with an alcohol content that is sufficiently high to ensure stability.

It is important, of course, that the dicalcium phosphate used be of U. S. P. purity. Another laboratory in a private communication has reported an experience with a supposedly U. S. P. material in which the pH of the finished product was 10. This resulted in discoloration and sedimentation of the elixir on aging. Elixirs made by the modified formula using dicalcium phosphate that complied fully with U. S. P. specifications, had a pH of 5.8. This is of the same order of magnitude as elixirs made by the U. S. P. XIII formula with talc.

While we are of the opinion that the proportions of the ingredients of the present U. S. P. XIII formula should be maintained, we recognize the manipulative advantages of the Lee and Sperandio procedure. This can be taken advantage of by the procedure of the following formula:

Compound orange spirit U.S.P.. 12 cc.
 Calcium phosphate U. S. P..... 35 Gm.
 Sugar U. S. P..... 320 Gm.
 Alcohol U. S. P.,
 Distilled water, of each,
 enough to make..... 1000 cc.

Thoroughly mix the compound orange spirit with the calcium phosphate in a mortar and transfer the mixture to a filter paper, which previously has been wetted with a mixture of 200 cc. of alcohol and 600 cc. of distilled water. Next pass through the filter the remainder of the menstruum. (About 760 cc. of filtrate will be obtained.) Dissolve the sugar in the filtrate. Finally add 40 cc. of alcohol and distilled water sufficient to produce 1000 cc.

The above procedure produces a perfectly clear elixir that remains clear when chilled to -10° C. The alcohol content is 22%. The purpose of adding 40 cc. of alcohol after filtration is to ensure clarity of the finished elixir, inasmuch as we have observed a slight tendency toward a faint opalescence developing when clear sugar syrup is added to the clear filtrate in the Lee and Sperandio formula. If the Revision Committee desires to maintain the alcoholic concentration at the present U. S. P. declaration of 22 to 24%, it will be necessary to add 50 cc. of alcohol rather than 40 cc. when bringing the elixir up to volume.

If the Revision Committee should decide to modify the formula for aromatic elixir drastically, a modified Sperandio and Lee formula is suggested. We are of the opinion, however, that careful consideration should be given before introducing so drastic a change. It is conceivable that a major reduction in the alcohol content may make the elixir more adaptable for some uses but it is equally conceivable that it may be less adaptable for some prescriptions in which it has been used in the past. One does not lightly discard a product formula that has proved so satisfactory for over four decades.

REFERENCE

1. Sperandio, Glen J., and Lee, C. O., "Aromatic Elixir," *THIS JOURNAL*, 9, 24(1948).

PROTEIN AND AMINO ACID PREPARATIONS

report on present status of products
to combat protein deficiencies, as issued
by the Council on Pharmacy and Chemistry*

PROTEIN and amino acid preparations may be conveniently divided into two general classes: (1) mixtures of those amino acids considered essential to human nutrition that are used to combat protein deficiency imposed by severe illness or starvation; (2) individual amino acids that may be used for specific therapeutic purposes.

Preparations in the first class include (a) hydrolysates of protein or sources of protein prepared by various methods of artificial digestion designed to provide adequate amounts of the essential amino acids, and (b) mixtures of synthetic amino acids.

Preparations in the second class include any of the individual amino acids that may be specifically indicated for the treatment of disease. Aminoacetic acid (glycine), formerly used in the treatment of myasthenia gravis, and histidine, which has been tried for the treatment of peptic ulcer, are examples of this type, though neither is currently recognized to be of specific value in these conditions. Neither methionine nor lysine, although promising for the treatment of disease of the liver, has been definitely established to be of specific therapeutic value for that condition.

Source of Dietary Nitrogen

While mixtures of the essential amino acids are presently recognized to exert a favorable antacid and nutritive effect in peptic ulcer, their primary purpose is to supply dietary nitrogen in readily assimilated form when there is serious interference with the intake, digestion or absorption of dietary protein. There is no evidence that

the addition of amino acids to foods will accomplish anything that cannot be accomplished by proper use of proteins as they occur naturally in the diet when there is no such interference.

The amino acids that are now regarded as indispensable for protein synthesis in adult man comprise those which the body is itself unable to synthesize and are generally listed as follows: phenylalanine, tryptophane, methionine, lysine, leucine, isoleucine, threonine, valine, histidine and arginine. These ten amino acids or their precursors are usually provided in mixtures intended for protein replacement in human beings but there is some doubt at present about the indispensability of histidine and arginine in adult man.

Exact Dosages Unknown

As yet there is insufficient information on which to set up exact dosage estimates for the amino acids that are prescribed to meet protein needs of the body. The daily requirements for the individual amino acids are under investigation, and there are indications that these range from 0.3 to 5 Gm. each per day. Until more is known of human requirements, amino acid preparations must be given in sufficient quantities to provide every essential constituent in substantial amounts. This may be based on the commonly recommended optimum daily intake of total dietary protein: 1 Gm. per kilogram of body weight, or about 70 Gm. daily for the average adult man. This figure is based on the fact that on a mixed diet the average protein intake necessary to maintain nitrogen balance has been found

* *New and Nonofficial Remedies*, 1948

to be about 45 Gm. There are wide variations in individual requirements and also wide variations in the biologic value of proteins from different sources, but it is estimated that the amino acid requirements will ordinarily be met on a diet containing 70 Gm. of protein.

Forms of Amino Acid Mixtures

Amino acid mixtures have appeared on the market in various forms: protein hydrolysates or hydrolytic products of good sources of protein in solution or powdered form for oral administration or intravenous injection; mixtures of amino acids in tablet form; synthetic amino acids in tablet form; synthetic amino acids combined with vitamins in tablets and elixirs; protein meals for use in tablets or food fortification. Most tablets or elixirs supply insignificant amounts for rational use in human nutrition.

Thus far, the Council considers as acceptable for nutritional purposes only those mixtures that provide adequate amounts of each of the essential amino acids. For the present, and until more evidence becomes available, the Council restricts acceptance of such amino acid mixtures for either oral or intravenous administration to hydrolysates of suitable pure proteins (such as casein) or good sources of protein (such as blood) in which more than 50% of the total nitrogen present is in the form of alpha amino nitrogen. This minimum degree of hydrolysis is considered essential to justify the designation of such products as hydrolysates and to reduce the nonantigenic properties of the mixtures used for intravenous injection and those used orally for infants and children who may be allergic to protein of the diet. The Council requires that evidence of nonantigenicity for each product should be submitted. The Council has permitted the addition of carbohydrate to such hydrolysates in proportions suitable for injection. The Council has not, as yet, accepted preparations containing added vitamins or other substances considered essential for adequate nutrition pending adequate justification for such preparations.

Hydrolysates of pure proteins such as casein, lactalbumin and fibrin are properly described as protein hydrolysates and are defined under this general heading in the

monograph which follows. They may be designated as "Casein (Lactalbumin, Fibrin) Hydrolysate." Hydrolysates of good sources of protein such as blood, liver and yeast are distinguished from pure protein hydrolysates and will be individually described under separate generic designations appropriate to indicate their respective derivation, e.g., Blood (Liver, Yeast) Hydrolysate. Restoration or addition of amino acids to hydrolysates should be limited to those considered essential for human nutrition and should be sufficient to furnish the equivalent of the biologically active form in an amount proportionate to the original source or to meet actual requirements if the quantity needed is known.

Modified Products

Products to which one or more amino acids have been restored or added or in which one or more of them have been at least partially removed should be designated as "Modified Casein (Liver, etc.) Hydrolysate." When carbohydrate such as dextrose has been added, the designation of such preparations should be expanded to indicate the carbohydrate component, e.g., "Modified Casein Hydrolysate with Dextrose () %." When such products are supplied in the form of solution for intravenous injection, the designation should be prefixed by the word "Solution" and include the per cent of hydrolysate provided, e.g., "Solution Casein Hydrolysate 5% (with Dextrose 5%)." Such designations do not preclude, but should be adequately displayed with, acceptable trade-mark names. The Council requires that all hydrolysates be labeled with the appropriate generic designation (to include dextrose or other suitable carbohydrate when this is added); the identity of the protein or source of protein from which they are derived when this is not declared in the descriptive designation; the method of hydrolysis (acid, enzymatic or other); the nature of modification in amino acid content after hydrolysis (if any); the percentage of each amino acid or its equivalent that is present, and the percentage of alpha amino nitrogen that is represented in relation to the total nitrogen content of the mixture.

Council consideration of hydrolysates for acceptance is further predicated on adequate rat growth studies to demonstrate nutritive

value and in the case of intravenous products also on adequate clinical evidence to demonstrate freedom from antigenic, pyrogenic and toxic properties. Claims for special therapeutic purposes of hydrolysates other than for general protein deficiencies must be supported by specific scientific evidence.

Pure synthetic mixtures of amino acids to be used for nutritional states or preparations of the individual pure amino acids for specific therapeutic purposes will be given consideration as evidence for their usefulness is established. Preparations of intact proteins used orally as food supplements are considered to be outside the purview of the Council unless specific therapeutic value is established for such products.



Protein Hydrolysates

These are broadly defined as artificial digests of protein derived by acid, enzymatic or other hydrolysis of casein, lactalbumin, fibrin or other suitable proteins that supply the approximate nutritive equivalent of the source protein in the form of its constituent amino acids. They are required to have more than half of the total nitrogen present in the form of alpha amino nitrogen.

Such preparations comprise (a) unmodified products in which there is neither partial removal nor restoration of any of the original amino acid precursors and for which the designation "protein (or casein, etc.) hydrolysate" is restricted and (b) modified products to which one or more amino acids have been added or one or more of them have been at least partially removed after hydrolysis and for which the designation "modified protein (or casein, etc.) hydrolysate" is required. Other labeling requirements and the permissible modifications in amino acid composition or the addition of carbohydrate are set forth in the foregoing general statement on Protein and Amino Acid Preparations.

Actions and Uses.—Parenteral preparations are useful for the maintenance of positive nitrogen balance in conditions where there is interference with ingestion, digestion or absorption of food. These conditions are most frequently encountered in severe illness and after surgical operations involving the alimentary tract. In the acute catabolic phase of nitrogen loss in healthy persons

who become suddenly ill, it may be extraordinarily difficult to achieve nitrogen balance with the amount of hydrolysate which can be administered. The acute nitrogen loss of brief severe illness has not been shown to be pernicious, and it is debatable whether hydrolysates should be employed under these circumstances. Protein hydrolysates should not be employed as a substitute for food proteins if the latter can be adequately utilized. Intravenous injection is contraindicated in severe hepatic insufficiency and in acidosis until the latter condition is corrected. Injection may produce untoward effects such as nausea, vomiting, hyperpyrexia, vasodilatation, abdominal pain, convulsions, edema at the site of injection, phlebitis, and thrombosis. Care must be exercised in looking for reactions that indicate danger. Many unfavorable reactions have been traced to inadequate care in the cleanliness of equipment and also to too rapid administration of the preparation. Solutions that are cloudy, that contain sediment or that have been opened for a previous injection should not be used. Unopened solutions should be stored in a cool place.

Claims for oral use of protein hydrolysates that are shown to be adequate nutritionally should, for the present, be limited as follows: (1) in the diet of infants allergic to milk when the allergy cannot be met by other foods; (2) in the treatment of peptic ulcer and in ulcerative colitis if acceptable evidence is submitted pertaining to the product concerned, and (3) in supplementing the diet in conditions in which a specially high protein intake is indicated, when it is not feasible to accomplish this by use of ordinary foods.

Claims for supplementing the protein in other conditions are not permissible, because there is no evidence of need for such supplementation and if it should exist it could be met by the use of ordinary foods.

Dosage.—See the foregoing general statement on Protein and Amino Acid Preparations. Until more is known of the individual requirements for the amino acids, the dosage to be given should be designed to supply substantial amounts of all those considered essential to meet the protein needs of the body.

NNR

PRODUCTS RECENTLY ACCEPTED
BY THE A. M. A. COUNCIL ON
PHARMACY AND CHEMISTRY



Council descriptions of new drug products only are published regularly in THIS JOURNAL as they are accepted. Rules upon which the Council bases its action appeared in the July (7:320) 1946 issue, and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.

DIPERODON.—Diothane-Merrell. The di-phenylurethane of 1-piperidinopropane-2,3-diol.—Piperidinopropanediol di-phenylurethane.— $C_{22}H_{27}N_3O_4$.—M. W. 397.46.—Prepared by combining piperidine and glycerol monochlorohydrin in the presence of alkali, and reacting the piperidinopropanediol with phenyl iso-cyanate.

Actions and Uses.—See under Diperon Hydrochloride (N. N. R. 1948, pp. 50–51).

Dosage.—See under Diperon Hydrochloride (N. N. R. 1948, pp. 50–51).

Tests and Standards.—

For tests and standards see *J. Am. Med. Assoc.*, 139:228 (1949).

The Wm. S. Merrell Company, Cincinnati

Diothane Ointment with Oxyquinoline Benzozate: Bulk and 28.4-Gm. tubes. Diothane 1%, in an ointment base consisting of petrolatum, lanoline and mineral oil.

METHAMPHETAMINE HYDROCHLORIDE.—Desoxyn Hydrochloride—Abbott.—Norodin Hydrochloride—Endo.— $C_{10}H_{15}N.HCl$.—M. W. 185.69.—*d*-Desoxyephedrine hydrochloride.—The hydrochloride of *d*-1-phenyl-2-methylamino-propane.

Actions and Uses.—The actions of methamphetamine hydrochloride are essentially similar to those of amphetamine sulfate; they differ only in degree. It appears that the central stimulant effects of methamphetamine may be slightly greater and the circulatory action slightly less than with amphetamine.

Methamphetamine hydrochloride may be used in the treatment of narcolepsy, in the control of oculogyric crises and various other manifestations of post-encephalitic parkinsonism, as an adjunct in the treatment of alcoholism and in the treatment of certain depressive conditions, especially those characterized by apathy and psychomotor retardation.

Methamphetamine hydrochloride has also been used as an adjunct in the treatment of obesity. It depresses the motility of the gastrointestinal tract and allays the sensation of hunger. It may assist some persons to adhere to a strict dietary regimen. It may also assist those in whom overeating is a response to a depressive state.

The contraindications to the use of methamphetamine are the same as those for amphetamine, namely, hypertension and cardiovascular disease. The drug should not be administered within four hours before sleep is desired.

Dosage.—It is advisable to begin with a small dose of 2.5 mg. of the drug and, if necessary, to increase the dose by increments of 2.5 mg. until the optimal response is obtained.

Tests and Standards.—

For tests and standards see *J. Am. Med. Assoc.*, 139: 228 (1949).

Abbott Laboratories, North Chicago, Ill.

Elixir Desoxyn Hydrochloride: 20 mg. per 30 cc., 500-cc. and 4,000-cc. bottles.

Solution Desoxyn Hydrochloride: 20 mg. per cc., 1-cc. ampuls.

Tablets Desoxyn Hydrochloride: 2.5 mg. and 5.0 mg.

Endo Products, Inc., Richmond Hill 18, N. Y.

Norodin Hydrochloride (Powder): 1-Gm., 5-Gm., and 10-Gm. vials.

Tablets Norodin Hydrochloride: 2.5 mg. and 5 mg.

POISON IVY-POISON OAK EXTRACT COMBINED.—Ivoko-Pitman-Moore.—A combination of equal parts of the extracted solids of the dried leaves of poison ivy and oak prepared in accordance with requirements of the National Institute of Health.

Actions and Uses.—Poison Ivy-Poison Oak Extract Combined is used for the prevention of symptoms of dermatitis due to contact with either of these plants.

Dosage.—Parenteral injections of the number and volume recommended for the product used. The interval between doses is usually two weeks.

An extract standardized to contain 1 mg. of total extracted solids (0.5 mg. of each) per cc. is administered in an average dose of 0.1 cc. of the extract diluted to a volume of 1 cc. In hypersensitive persons, one-twentieth of that dose should be used as a test dose and the dose then gradually increased to the average. It is administered at intervals of one to three weeks during exposure.

Pitman-Moore Company, Indianapolis, Ind.

Ivoko Poison Ivy-Poison Oak Extract with Sterile Diluent: 1 mg. extracted solids per cc.,

(Continued, page 128)

Tennessee Graduates Hear Secretary Fischelis

"The World Awaits You" was the title of the commencement address delivered by Dr. Robert P. Fischelis, secretary and general manager of the American Pharmaceutical Association, to the December, 1948, graduating classes of the medical division of the University of Tennessee.

The university medical units, located in Memphis, are comprised of the colleges of medicine, dentistry, pharmacy, nursing and biological sciences. The combined class was the largest ever graduated by the university and the class of the school of pharmacy was also the largest in its history—61 students receiving their B.Sc. in pharmacy.

A warning that a compulsory health insurance program is not a cure-all, tempered with the advice that government participation in medical care has brought definite benefits, was given by Dr. Fischelis.

Although pointing out that no one at this point can tell what the effects of compulsory health insurance might be on American medical care, Dr. Fischelis added: "There are, however, some things we do know."

Among these he listed:

1. That political interference with professional practice is never wholesome.
2. That the application of the insurance principle to payment for medical care is sound.
3. That the costs of medical care are so high as to make complete service in this field prohibitive to large groups of our population.
4. That there are systems of payment for medical care in operation which relieve the strain upon individual financial resources at any given time



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5. That there is a distinct trend toward the establishment of medical centers through which the services of all professional groups in the field of medical care can be made available at reasonable costs.

6. That participation in the costs of medical care by federal, state and local government units is an established procedure which has enabled us to prevent and cure diseases and relieve the permanently afflicted to much better effect than has been possible without such support.

7. That group practice has been beneficial to patients as well as to members of the medical and allied professions.

8. That additional hospital facilities in needy and sparsely populated communities will become available to general practitioners as the result of the Federal Hospital Survey and Construction Act.

"Knowing these things," Dr. Fischelis said, "it should be possible to evolve a system cushioning and spreading more evenly the unpredictable impact of illness so that no one shall be denied a high quality of medical care."

He also urged the "new members of the medical team" to remember that medicine, dentistry, pharmacy, nursing, and biological sciences are "deeply interrelated and closely interwoven with public health" and that each must depend on the other.

Role of the Pharmacist

Referring to the role of the pharmacist as a member of the medical team, Dr. Fischelis reminded the classes that "there are more than 50,000 pharmacies scattered throughout the United States and more than five billion visits are made annually to these establishments by the public. The average pharmacist sees 200 or more people daily and he sees them before as well as after they have been sick." Thus, he stated, "the outpost or first point of contact of many laymen with the medical team is the drugstore."

Referring to the pharmacist as a "case finder," he reminded the audience that "one of the foremost problems which confront medical research today is the development of more effective case-finding techniques in cancer, cardiovascular diseases, and many other baffling illnesses." He also suggested that the rest of the medical team will find the pharmacist an indispensable member—"for he can appropriately suggest consultation with a physician or dentist, when he finds that some misguided individual is attempting to be his own medical adviser and is probably postponing the day of reckoning by continually trying to relieve symptoms of what may be a major ailment with some advertised remedy."

Dr. Fischelis also addressed the newly organized Rho Chi Society at the School of Pharmacy.

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Eskacillin

has the same unusual palatability which gained such widespread acceptance for Eskadiazine and Eskadiamer. It tastes so good that even children like to take it.

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DENTAL REMEDIES RECENTLY
ACCEPTED BY A. D. A. COUNCIL
ON DENTAL THERAPEUTICS



Admission to Accepted Dental Remedies means that a product and the methods by which it was marketed at the time of consideration were not found to be in violation of the published rules of the Council on Dental Therapeutics. A summary of the rules appeared in This Journal, 7:153 (April), 1946. Accepted products are reconsidered periodically.

FLUORINE-CONTAINING SUBSTANCES¹

Sodium Fluoride Purified: A brand of sodium fluoride. Distributed by Mallinckrodt Chemical Works, St. Louis.

Sodium Fluoride Tablets: Each tablet is stated to contain sodium fluoride, 80 mg. Distributed by the Graham Chemical Company, Jamaica, N. Y.

FORMULATION AND PACKAGING OF AQUEOUS SOLUTIONS OF SODIUM FLUORIDE FOR TOPICAL APPLICATION

An abstracted report from the Bureau of Chemistry and Council on Dental Therapeutics

In the preparation and packaging of sodium fluoride solutions, there has been a tendency to overlook the possibility of interaction between the glass containers and the fluoride solutions.

When fluoride solutions began to appear on the dental market an investigation was started in the Bureau of Chemistry to determine the shelf-life or storage characteristics of these products as supplied in various types of containers. Preliminary tests indicated considerable changes in the pH of the solutions when stored in pharmaceutical bottles.²

A paper on this subject was presented by Savchuck and Armstrong³ at the 1948 meeting of the International Association for Dental Research. These investigators found that the pH of sodium fluoride solutions stored for six months in prescription glass bottles rose to about 9.4 when the bottles were unopened and to about 9.5 to 10.1 when the bottles were opened at weekly intervals. Significantly smaller changes were noted when the solutions were stored in "Pyrex" flasks.

The Bureau of Chemistry has found that the pH value of freshly prepared 2% aqueous solutions of sodium fluoride of a good pharmaceutical quality is about 6.9 to 7.0, or very nearly neutral. When such a solution was kept in a 4-oz. pharmaceutical glass bottle at room temperature for one week, the pH rose to 8.5. After forty-three weeks the pH was 10.2. Solutions stored in "Pyrex" containers were not affected so rapidly. The pH was 7.5 after one week and 7.8 after 43 weeks at room temperature.

A 2% aqueous solution of sodium fluoride was stored in glass containers lined with paraffin wax. The pH value was 7.3 after one week and 7.5 after 37 weeks.

Very slight changes were noted when similar solutions were stored in plastic ("Plax") bottles for eight weeks.

It should be emphasized that these laboratory tests simply reveal the changes that may occur during the storage of fluoride solution in ordinary glass containers and do not determine the clinical significance of these changes.

It must be remembered that only the value of simple 2% aqueous solution of sodium fluoride is supported by sufficient direct clinical evidence to justify its routine use. Many of the solutions of sodium fluoride now available for topical use contain detergents, buffers, flavors, colors, and other ingredients which may affect their usefulness in the control of caries.

The most significant clinical experimental work on topically applied fluorides has been done with simple aqueous 2% solutions dispensed in ordinary pharmaceutical glass bottles. Although definite information concerning the pH values of the solutions at the time they were applied to the teeth is not available, it is likely that they were used more than one week after they were prepared. This would indicate that their pH value was 8.5 or higher. The U. S. Public Health Service is conducting several studies at Chattanooga, Tenn., designed to provide information regarding the importance of the pH of topical fluoride solutions.⁴

The Council on Dental Therapeutics wishes to encourage clinical investigation of other fluoride preparations, including solutions which contain buffers and other ingredients. The Council calls attention to the need for further research to determine the relative effectiveness of 2% solutions of sodium fluoride at integral pH values ranging from 4.0 to 10.0. In order to isolate the effects of variation in pH value, these latter experimental solutions should contain only such added ingredients as are necessary to adjust the pH value.

¹ See *Accepted Dental Remedies*, ed. 14, p. 70.

² Proceedings of the University of Michigan School of Public Health and School of Dentistry Inservice Training Course for the Evaluation of Dental Caries Control Technics, September 8 through 13, 1947. *J. D. Res.* 27: 371, 1948.

³ Savchuck, W., and Armstrong, W. D., "Stability of Aqueous Solutions of Sodium Fluoride," International Association for Dental Research, Twenty-sixth General Meeting, June 13 to 20, 1948. *J. D. Res.* (in press).

⁴ Knutson, J. W., personal communication.

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*Jolliffe, N.: The Preventive and Therapeutic Use of Vitamins, *J. I. M. A.*, 129, 613, Oct. 17, 1915.

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science news capsules

INCREASING CANCER HAZARDS may be expected through technical developments in the liquid fuel, organic chemical and metallurgical industries, as well as in the application of atomic power unless steps are taken to prevent such dangers, Dr. W. C. Hueper of the National Cancer Institute has predicted. Only a restricted number of the cancer-causing agents in industry have been recognized so far and since occupational cancer-causing chemicals do not show any special characteristics to distinguish them from harmless substances, plant physicians must be alert to such hazards and to methods of early diagnosis, prevention and treatment of occupational cancers.

VITAMIN K, important for its capacity to check dangerous bleeding from wounds, can now be prepared in forms that will keep longer without deterioration. U. S. patent 2,456,686 has been granted to a group of scientists at St. Louis University School of Medicine, headed by Dr. Edward A. Doisy, Nobel prizewinner, in medicine and physiology in 1944. The new varieties of vitamin K, chemically described as its hydroquinone form, or the diester or diether of this form, can be prepared by the treatment of pure vitamin K, but are usually obtained by treating the raw materials from which the vitamin can be extracted.

ALEUTIAN ISLAND natives enjoy almost complete freedom from heart disease, Dr. Fred Alexander, expedition doctor and heart specialist on the staff of the Massachusetts General Hospital, found in his examination of 132 of the fewer than 1000 natives now on the islands. The report of the Harvard University Expedition, which made a six-field study of Aleuts during this past summer, states that the Aleuts lived chiefly on fish and meat, foods high in protein, until the Russians brought in flour and sugar in the 18th century. Scientists feel that their high-protein diet may be partly responsible for the lack of heart disease.

A **NEW** acid- and abrasive-free liquid preparation that removes the shine from clothing without injuring the fabric has just been made available to dry cleaners. The fluid works on the same principle as cold permanent wave lotions, and when applied to the shiny area of a piece of material, its chemical action temporarily softens the tiny fibers which normally form the nap. These fibers, now pliable, can

be brushed back to their original position, and the nap restored. On fabrics that have no nap, shine usually results from a flattening of the fibers of the material and when the fibers are softened, brushing restores them to their original shape, thus killing the shine.

METAZENE MIST, a deodorant which kills unpleasant odors in the air, functions by combining with unsaturated sulfur and nitrogen compounds (which are responsible for many common disagreeable odors), thus removing them from the air within five seconds after discharge. Dr. Lowell B. Kilgore, a Washington, D. C., chemist, developed the compound in response to requests from hospitals and other institutions for a deodorant that would actually destroy unpleasant odors, rather than cover them up with a more pleasant odor. The exact chemical nature of Metazene has not been announced and is not yet available commercially, but tests indicate its commercial practicability and it may soon be marketed under a trade name, Dr. Kilgore states. The deodorant is said to be nontoxic, noncorrosive, and nonflammable.

RINGWORM is probably the most common skin disease today, Dr. Everett C. Fox of Dallas reported to the American Medical Association meeting in St. Louis. From records of more than a million cases, eczema and acne were high on the list of the 10 most frequent skin diseases. The other seven are: Seborrhea, contact dermatitis, impetigo, scabies, nettle rash or hives, psoriasis, and pityriasis rosea.

DIABETICS' life expectancy would be far greater than that of approximately three-fourths of the non-diabetic population if, in addition to proper diet, insulin and exercise, they obtained complete health examinations every six months and if their weight and the results of laboratory tests were reported every three months, declared Dr. Elliott P. Joslin of Boston at the meeting of the American Medical Association in St. Louis in December, 1948. He said that diabetes is about fifty times as common in persons over 65 as in those under 15 years, and it occurs nearly four times as often among relatives of diabetics as among the general population. It is overwhelmingly more common in overweight persons than in underweight persons and is nearly twice as frequent among married women.

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American Pharmaceutical Association

April 24-30, Jacksonville, Florida

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² A PH A Committee will work with Convention Bureau in doubling up occupants of twin-bed rooms, please suggest associates or committee members who could share room with you

³ Very scarce, please arrange for double occupancy

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⁴ By indicating arrival after 6 00 p. m. you are guaranteeing the use of the room assigned to you for that night and will be billed for same by the hotel at which reservation is made.

Please print (or type) the Names and Addresses of All Occupants Including Person Making Reservations.

Name

Street Address

City & State

Date _____ Signature _____

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A. PH. A. Housing Committee
Jacksonville Tourist & Convention Bureau
307 Hogan St.
Jacksonville 2, Florida



INFORMATION SERVICE

Members of the American Pharmaceutical Association are invited to submit their professional problems to the Journal, 2215 Constitution Ave., N. W., Washington 7, D. C., giving all pertinent details. Advisory service is provided by the A. Ph. A. library and technical staff and the Journal panel of technical consultants.

PALATABILITY

Can you assist me in locating a flavoring agent which will render a saturated solution of magnesium sulfate more palatable?—H. L., Arkansas.

Generally speaking, substances with a sour taste are most useful for disguising salty, bitter, or insipid tastes. According to "Technic of Medication" by Fantus, "either citric acid in the proportion of 0.5% or the syrup of citric acid may be used. Magnesium sulfate is disguised probably as much as is possible by giving it in an ice-cold effervescent lemonade."

WANTS PLASTIC MOLD

Will you kindly inform me where I can obtain the new plastic suppository mold?—F. S., Cebu City, Philippines.

It is our understanding that plastic suppository molds may be procured from the John M. Maris Company, 2100 Arch Street, Philadelphia 3, Pa.

Rx FROM YUGOSLAVIA

I have received a request to fill a prescription which was sent from Yugoslavia. The prescription is for ampuls "Tonofosfani." Do you have information about this product?—H. O., Washington.

We have been unable to locate a preparation with this exact spelling. However, we have located Tonophosphan Ampuls and we assume that they are the same thing since

the custom of using "f" for "ph" is used in some countries and not in others.

This preparation is chemically dimethylaminomethylphenylphosphonic acid. It is made by "Bayer" Igephan AG., Zürich, Switzerland. We have been unable to locate an American counterpart.

DETERMINATION OF pH

Is it possible to compute by stoichiometry the pH of 7, without going through the process of pH indicators? . . . I want to add enough triethanolamine to 5 Gm. undecylenic acid to make the acid neutral.—L. W., New York.

We assume from your letter that you attempted to determine the pH by means of paper impregnated with an indicator solution and that you did not have water present. Since the pH is a function of the hydrogen-ion concentration and there are no hydrogen ions present unless water is present, the paper would not respond.

It is not possible to determine how much triethanolamine to add to undecylenic acid to arrive at a pH of 7 by simple stoichiometric calculations. Since you intend to use 5 Gm. of undecylenic acid in your preparation, we added varying amounts of triethanolamine to this quantity of the acid and after the action was complete added large quantities of water and determined the apparent pH. From this it would seem that about 1.75 Gm. of triethanolamine is approximately the correct amount to add to 5 Gm. of undecylenic acid to arrive at

(Continued, page 116)

Facts About Conception Control

Clinicians generally favor the use of an occlusive device supplemented by a sperm-immobilizing agent for optimum protection. However, authoritative studies have established that a high degree of protection is afforded by use of a jelly alone—provided that the jelly has rapid spermaticidal action together with adhesive and cohesive properties sufficient to provide a dependable barrier.

When dependence must be placed on the "jelly alone" method, there is no better product available than "RAMSES"* Vaginal Jelly† because:

1. It provides rapid spermaticidal action.
2. It possesses dependable adhesive and cohesive properties—will not melt or run at body temperatures.
3. Direct-color photographs show that it will occlude the cervix for ten hours.

"RAMSES" Vaginal Jelly is available in regular and large-size tubes through all pharmacies.



†Active ingredients: Dodecaethyleneglycol
Monolaurate 5%; Boric Acid 1%; Alcohol 5%.



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(Continued from page 114)

an apparent pH of 7. We believe that this will be close enough for the practical purposes intended. Of course, you do not need to add the water since we added it only for the purposes of getting a reading on the pH meter.

NOT A MEDICINAL

Can you supply us with information concerning a chemical called "tetra-ethyl thiuram-disulfide," used for intestinal parasites and chronic alcoholism? This drug has been used in Europe.—W. B., Michigan.

This substance and other closely related compounds have been used in this country primarily to prevent mold in seeds. The compound may be obtained from the E. I. du Pont de Nemours & Co., Wilmington 99, Del.

However, although the compound is available, it may not be used for drug purposes such as in the treatment of alcoholism because no one has gathered clinical data, etc., and filed a new drug application with the Food and Drug Administration. The chemistry of this substance is such as to suggest that it might be very toxic since it is related to thiourea which has an action very much akin to thiouracil. In addition, it is doubtful if drugs are of value in the specific treatment of alcoholism.

DIBROMOSALICYLALDEHYDE

Would you please advise me as to where I may obtain dibromosalicylaldehyde and under what other name it may be found?—N. G., Michigan.

This product is supplied by Hynson, Westcott and Dunning, Inc., Baltimore, Md., under the registered trade-mark name "Dalyde." It is supplied in the form of a solution, an ointment, and a dusting powder.

SOURCE OF PROTAMINE SULFATE

Will you please advise us of the source and manufacturer of protamine sulfate intended for use in connection with dicumarol.—A. S., Kansas.

Protamine sulfate is now being supplied by the Paul Lewis Laboratories, 4253 North

Port Washington Road, Milwaukee, Wis.

DIBENAMINE HYDROCHLORIDE?

Could you please tell us what "dibenzamine" is and who manufactures it?—C. R., New York.

A search of the usual sources of information has failed to locate anything concerning "dibenzamine." We are wondering if it may not be dibenamine hydrochloride (N,N-dibenzyl-B-chloroethylamine hydrochloride) in which you are interested.

Dibenamine hydrochloride is a sympatholytic and adrenolytic agent. It is manufactured by Givaudan-Delawanna, Inc., Delawanna, N. J.

The latest information we have is that dibenamine hydrochloride is not yet on the market but is being supplied to qualified investigators for clinical trials.

DANGEROUS RODENTICIDE

I should like information as to the physical properties of castrix, i.e., its solubility in water, alcohol, acid solution, and alkali solution, and the name of the company manufacturing it.—G. G., Kentucky.

Castrix is not commercially available. It has been manufactured in the United States in relatively small quantities for pharmacological investigation by the J. T. Baker Chemical Company, Phillipsburg, N. J.

According to the Insecticide Division of the U. S. Department of Agriculture, castrix produces convulsions comparable to those of strychnine. It possesses the disadvantage of being very slow in its action and quite unpalatable to rats. Because of the inherent dangers in using so toxic a chemical as castrix, it is probable that it will never be released for general use as a rodenticide.

p-AMINOSALICYLIC ACID

Who is the manufacturer of para-aminosalicylic acid and the sodium salt of the same name?—N. G., New York.

p-Aminosalicylic acid is made by the Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J.

Typical Days



FROM THE SECRETARY'S DIARY FOR
DECEMBER, 1948-JANUARY, 1949

To all who took time to send word about this diary, my thanks. It seems that the consensus is that it should be continued. Some have asked about the lag between the days reported and the appearance of the record in *THIS JOURNAL*. The explanation is that about six weeks elapse between the time copy is furnished to the printer and the actual appearance of *THIS JOURNAL*—a situation not too satisfactory but difficult to remedy.

This time we combine December recordings with some of January. Thereafter, through a special device, the lag may be reduced a few weeks at the sacrifice of accuracy in dating but at no sacrifice in accuracy of reporting.

2nd This day spent mostly in New York addressing Columbia University pharmacy classes and working with Student Branch officers. Also a conference with art and editorial advisers in Newark, N. J.

A number of interesting telephone conversations, on successive days, with Justin Powers who is in Cuba acting as Chairman of the U. S. Delegation to the First Pan-American Congress of Pharmacy. Thus kept in touch with developments in the progress of this quasi-official meeting of pharmacists representing many South and Central American republics and completely dominated by them.

8th On December 8 a conference with the Acting Librarian of the Army Medical Library to further cooperation in making Washington's pharmacy library facilities more complete. Later some conferences with Federal Security Administrator Ewing on progress in the national health program and Walter Greenleaf of the Office of Education on the publication of our guidance leaflet for prospective pharmacy students.

On December 9 conferring with Col. Eanes of the Selective Service Administration and preparing for the Joint Conference of A. P. H. A. Council members and the N. A. R. D. Executive Committee to be held tomorrow at Chicago.

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10th All of December 10 spent in the annual joint N. A. R. D.-A. Ph. A. executive conference at the Hotel Morrison and after dinner with Pat Costello to the University of Illinois School of Pharmacy where the A. A. C. P. Executive Committee was in session. Here the principal topics for discussion were pharmacy student deferment and financial aid for pharmaceutical education.

The following morning completing action on the joint resolutions and press statement reporting the conference. Next a further session with the A. A. C. P. Executive Committee and then a session with Dr. Dolezal of the American Hospital Association and President Arthur Purdum of the A. S. H. P. regarding the ambitious hospital pharmacy institute program for 1949. Following conferences with Hugo Schaefer, John Dargavel, B. V. Christensen, Louis Zopf, R. A. Kuever and others, returned on the "Capitol Limited" to Washington.

12th This Sunday at the office preparing for the Board of Canvassers which meets tomorrow. During the morning a surprise visit from Dean and Mrs. Torres-Diaz of the College of Pharmacy of the University of Puerto Rico and then a three-hour conference with Justin Powers, returned from the Pan-American Congress in Cuba while this writer was in Chicago. A pleasant telephone conversation with Tom Hoskins of Louisville who has done splendid work on membership with the aid of Louisville college students.

All day with the hard-working members of the Board of Canvassers including L. M. Kantner, Chairman; George Hager, Francis Balassone and their associates, Frank Black and Ralph Dudrow, who counted more than 4500 ballots to determine the election of new officers for the A. Ph. A. A difficult job well done in about 12 hours followed by a good dinner at the Water Gate Inn.

14th At the annual meeting of the National Drug Trade Conference attended by delegates from the 10 national associations. The warmest interchange was on the controversial subject of "who shall sell drugs and medicines?" and "what shall be done about lengthening the period of pharmaceutical education?" During the afternoon a conference at the Pan-American Sanitary Bureau with Assistant Director Murdock, U. S. P. Chairman Cook and N. F. Chairman Powers on the proposal for a Pan-American Pharmacopœia.

17th Closing the week with a pleasant Christmas party for the staff including a dinner at the "Iron Gate" where Melvin Green proved himself an excellent master of ceremonies.

On Saturday (18th) some last-minute work on the commencement address for delivery at the University of Tennessee and then a late start on the Southern Railway for Memphis, which was reached about 8 p. m. Sunday night.

20th Early to breakfast with the newly installed Rho Chi chapter at the School of Pharmacy at the University of Tennessee in Memphis and then a view of the campus and medical center of this splendid institution with Dean Crowe acting as guide. A faculty and trustee luncheon, followed by more sight-seeing, and a pleasant chat with Dean Hyman of the Medical School of the University of Tennessee who is also the Vice-President of the University in charge of this fine medical center. And now for a drive across the bridge which spans the Mississippi and leads into Arkansas, returning to the hospitable home of Dean Crowe where Mrs. Crowe had provided a wonderful dinner of wild duck, bagged by no other than the Dean himself. Then to the University Hall for the Commencement exercises at which the largest pharmacy class received degrees. It was a pleasure to address this fine group of medical, dental, pharmacy, nursing and allied science graduates.

22nd Most of this day, after arrival in Washington at noon, and the next day catching up with the office routine. Now homeward bound for Christmas and to spend the succeeding day preparing for the move to Washington.

27th These days reviewing year-end activities and an occasional talk with Washington officials who were not away on Christmas vacation. Among these, Colonel Goriup, whose impressions of the Pan-American Congress coincided well with those of Dr. Powers and other American delegates.

A year-end trip homeward by way of Philadelphia and stopped to visit the new Smith, Kline and French Laboratories which in many respects are the last word in equipment and facilities. Particularly impressive were the strictly pharmaceutical research facilities ably planned by Rudolph H. Blythe. A rapid trip from the laboratories to North Philadelphia station with J. L. Hammer, my host on the S. K. F. visit, who had some interesting ideas on manufacturer-retailer cooperation.

1st After seeing the New Year in at Red Bank, spent the holiday and week end in further sorting and packing many books and papers for the trip to Washington. Here came an opportunity to supplement the files of the Army Medical Library with many a document and journal, fully aware that it will serve a useful purpose in the hands of those who are completing the incomplete files of that great library and supplying foreign libraries with needed publications.

Most of the early days in January devoted to reviews of various activities and glad to note that the budget for 1918 remained in balance and that the year's activities showed an excess on the credit side of the ledger. Now actively engaged in convincing the Finance Committee that more activities must be carried on and that expenditures in 1919 will exceed those in 1918 considerably.

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A. Ph. A. Branches



LOCAL BRANCHES

DR. GEORGE SECORD of Loyola School of Medicine recently spoke at a meeting of the South-east Wisconsin Branch on "Prescription Pricing."

Members of the Association will regret to learn of the death on December 18 of Mrs. Viola McInnis Horn, wife of Emil C. Horn, president of the South-east Wisconsin Branch. Mrs. Horn is survived by her husband, who was chairman of the 1917 A. Ph. A. convention in Milwaukee, and two daughters, Emile Lou and Viola Jean, students at the University of Wisconsin.

What started as a local event became a national gathering when the Buffalo Pharmacy Council and the Western New York Branch sponsored a testimonial dinner to honor Mearl D. Pritchard, first vice-president of A. Ph. A. Charles Mulloy, past-president of the New York Pharmaceutical Association, extended the greetings of 15,000 pharmacists of the state, and then gave a brief history of Mr. Pritchard's activities in professional and civic affairs. Dean A. B. Lemon presented the good wishes of the University of Buffalo School of Pharmacy, and introduced Dr. Ernest Little, president of A. Ph. A. In recognition of 27 years' leadership in local, state and national fields of pharmacy, Karl Smither, president of the Buffalo Academy of Pharmacy, presented to Mr. Pritchard a framed scroll of merit bearing the signatures of the officers of all the pharmaceutical associations of western New York.

In his address "Pharmacy—Past and Present" Dr. Little projected a thought for the future as well: "Pharmacy of tomorrow will be exactly what the present students make it, but Dr. Elliott's survey of pharmacy gives us definite recommendations to guide us in the right direction."

The winter program of the Northern Ohio Branch scheduled a program of speakers varied with open discussion: October, E. B. Buchanan, Deputy Food and Drug Commissioner of Cleveland; November, "Hydrophylic Bases, N. F., U. S. P. and N. N. R.," Wallis K. McAllister; January, "Radioactive Isotopes in Medicine." Dr. Paul

Mattis; February, "Vehicles in Pharmaceuticals," Dr. Pierre F. Smith. In December, Harry Fraiberg led an open discussion of prescription pricing in which quotations differed from 20 to 30%.

The 1949 officers of the branch will be: Joseph Matousek, president; Nelson Schroeder, vice-president; Robert Stockhaus, secretary; Charlotte Curtiss, treasurer.

STUDENT BRANCHES

Stepping "out" to look "in" at their own profession, the Brooklyn College of Pharmacy Branch is inviting members of allied professions—medicine, dentistry, podiatry, veterinary medicine—to give their views on methods of cooperation between the health professions.

Dr. Harry L. Goldwag, Professor of Pharmacology and Therapeutics at the Long Island University School of Podiatry, urged that pharmacists give to podiatrists' prescriptions the same respect they give to other prescriptions. At least 20% of the U. S. P. and N. F. preparations are of use to the podiatrists and the dispensing of these preparations by prescriptions can offer a steady financial return to the pharmacist.

Dr. Philip Ollstein, member of the Department of Preventive Medicine and Public Health at Cornell University College of Medicine, gave practical do's and don'ts and some two-pronged advice aimed at his own profession as well as at pharmacists. Condemning counter-prescribing, Dr. Ollstein urged the pharmacist to send his patron to the proper medical channel. Regarding the pharmacist's commenting to a patron on the content of a prescription or on the condition requiring medication, Dr. Ollstein gave an emphatic "Don't!" Another "don't" covered the stocking of large volumes of proprietaries, for physicians are apt to stop prescribing a specific medicament as soon as they lose the blotter advertising it. For mutual help, there was the suggestion that physicians advise patients about unusually expensive medicaments so that they will not be shocked or annoyed by the pharmacist when they learn the cost. Although he took into account the requirement of different remuneration for different facilities, Dr. Ollstein still urged a certain standardization of price for the same quantity of the same medicament. One of the most important "do's" was the suggestion for a pictorial publicity program covering the course of study and the various fields open to the pharmacist, so that the public may know more about the profession.

"All work and no play" will not afflict the University of Georgia Branch because it has alternated scientific meetings with social get-togethers this winter. Result? Both have been well attended. In entertaining both faculty and students of pharmacy at a banquet, the Georgia Pharmaceutical Association chose its toastmaster from the student branch, its president William H. Walls. A newly established chapter of the Rho Chi at the

University will have as its first president, George E. Mudter.

One of the guest speakers playing an important role in the 100% membership campaign of the University of Tennessee Branch was Dr. L. C. Templeton, prominent oral surgeon of Memphis, who spoke on "The Relations of Pharmacy and the Dental Professions."

In November, Dr. Wilburn H. Ferguson of Quito, Ecuador, spoke to the University of Texas Branch on "Drugs and Medicinal Plants of the Head Hunters." From his own collection, made during the many years he spent among the native tribes of South America, Dr. Ferguson exhibited many new and rare drugs and an assortment of shrunken human heads.

The "History and Development of Cosmetology in the Drug Stores" was given in December by Chester E. Scott, district representative for Richard Hudnut. Pointing out that the use of cosmetics is no longer a fad but that it has its own relation to physical and mental health, Mr. Scott showed that the relation between cosmetic houses and retail pharmacies is one of mutual interest. The larger cosmetic houses classify retail pharmacies according to their community prestige, appearance, and ability to sell certain cosmetic lines.

The 1949 official family for the branch will be: Frank Pineda, president; James H. Frank, vice-president; June Metcalf, secretary; Chester E. Anding, Jr., treasurer; Irvin S. Chapman, reporter-editor; Paul M. Perrone, parliamentarian; Robert C. Moss, Louise Eads, Sam Perrone, executive committee; Imogene Maulsby, Allan D. King, Grace Niermeier, J. H. Arnette, program committee; Miss Esther Jane Wood, Dr. S. G. Mittelstaedt, faculty advisers.

The important role of the pharmacist in the control of anemia through the producing and dispensing of blood dyscrasias and liver extracts was emphasized by Stanley W. Rosenfeld in his discussion of "Pernicious Anemia" before the St. John's University College of Pharmacy Branch. Mr. Rosenfeld, medical service representative for Eli Lilly and Company, brought out the fact that these two medicaments in their various dosage forms are second in sales only to such antibiotics as penicillin and streptomycin.

During the Easter vacation members of this branch plan to travel from Brooklyn, N. Y., to Indianapolis, Ind., to visit Eli Lilly and Company.

Will a five-year plan come to pharmacy? The Oregon State College Branch planned to start the new year with a discussion by students and faculty of the proposed five-year pharmacy curriculum. At the last meeting of '48 Vernon L. Kitchell was given a token of appreciation for his artistic work on the National Pharmacy Week display.

Revisions in the pharmacy curriculum are being considered all across the nation. The University of Buffalo Branch had a panel discussion on the needed revisions during the winter.

Records of the Duquesne University Branch of Pittsburgh, Pa., show a variety of topics covered in the winter meetings: "Radioactive Therapy," John S. Foley; "Vitamin B₁₂," Joseph Mrocza; "Allergic and Histaminic Drugs," Sister Mary Nomina and Patrick Caruso; "Homeopathic Pharmacy," Anthony J. Monaco; "Diabetes and the Pharmacist," Ralph H. Pater; current topics, William J. Wilkins, Jr., and Sister Mary Kevin; and three book reviews: "Remington's Practice of Pharmacy," Ruth M. Coll; "Preparation of Scientific Papers," Regis A. Kocab; "Science Advances," Gerard J. Wolf.

Meeting attendance and interest have soared for the Medical College of Virginia Branch because of the excellence of the season's speakers. An M. C. V. alumnus and former Army colonel, Dr. Sidney Paige, gave an address illustrated by slides and graphs on "Malarial Work in North Africa." Although he predicted no miracles, Dr. George A. Valley, senior bacteriologist for Bristol Laboratories, Syracuse, N. Y., gave a promising future for antibiotics in his talk, "The Past, Present, and Future of Antibiotics."

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ASSOCIATIONS

An experiment in diabetes detection has been reported as under way on Staten Island, according to Nicholas Gesoalde, executive secretary of the New York State Pharmaceutical Association. The experiment, which offers a simple urinalysis free to all persons, is being carried on by the Richmond County Medical Society in cooperation with the Staten Island Pharmaceutical Association. The pharmacists are handing out urinalysis slides to callers who ask for them. On the slide the person deposits a small amount of urine and returns it to the pharmacy with his name and the name of his family physician. The pharmacist makes a simple sugar test of the sample and if he finds any amount of sugar he passes the slide and data along to the medical society. The family physician then makes a further test and carries on from that point.

The sixth winter conference of the Michigan Academy of Pharmacy was held Friday, December 10, at the Engineering Society of Detroit with President Walter M. Chase presiding. Toby Wiant, former war correspondent, was the after-dinner speaker and discussed conditions existing in China today. At the annual business meeting held later, it was announced that the following directors were elected to serve three years: John H. Webster, Dean E. P. Stout, Lewis W. Rowe, and Ralph J. Mill. Speakers at the business session were: Dr. Theodore E. Woodward, associate professor of medicine in the University of Maryland and instructor of preventive medicine in Johns Hopkins University, who told of his "Experiences with Chloromycetin in the Federated Malay States" and Dr. E. H. Payne of Parke, Davis & Co., who made the first tests with the drug during a typhus epidemic in upper Bolivia.

On December 7, 1948, at the Waldorf-Astoria in New York the American Pharmaceutical Manufacturers' Association honored the National In-

stitute of Health at the 1948 Scientific Award Dinner by presenting the Institute with the scientific award of distinction, which recognizes a fundamental research contribution to public health in the field of the medical sciences and for basic progress in drug therapy. Achievements which won honors for the past year included: Isolation and identification of the organisms which cause several types of common cold; development of tests for amoebic dysentery and other amoebic diseases; improving the treatment for malaria by testing new drugs; and identifying the common snail as a carrier of schistosomiasis, a disease contracted by soldiers of the Eastern Theatre which is endemic in the Orient and which attacks the brain and other vital organs.

"Properties of Newer Antibiotic Preparations with Special Reference to Modifications of Penicillin and Streptomycin" was discussed by Dr. William T. Salter, professor of pharmacology, Yale University School of Medicine at a recent meeting of the Connecticut Association for the Advancement of Professional Pharmacy.

Redfield E. Bryan, Baton Rouge, is the newly elected president of the Louisiana State Pharmaceutical Association for the 1949-1950 term. Ronald L. Macke, Alfred Trahan, and Milton J. DeRouen, all of New Orleans, were returned by popular vote to the offices of recording secretary, corresponding secretary, and treasurer, respectively.

COLLEGES

Newell Stewart was honored with a testimonial dinner and dance sponsored by the Tucson Pharmaceutical Association and the School of Pharmacy of the University of Arizona on December 6, in recognition of his election to the presidency of the National Association of Boards of Pharmacy at the San Francisco convention. Rex Von Steinwehr, president of the Tucson Pharmaceutical Association, made the welcoming address. More than 250 persons attended. Among the honored guests were the Honorable Dan E. Garvey, Governor of the state of Arizona; Dr. Robert L. Nugent, vice-president of the University of Arizona; Dr. Richard A. Harvil, dean of the College of Liberal Arts; Clarence Houston, president of the Board of Regents; Dr. Alfred Atkinson, past president of the University of Arizona; and A. Louis Slonaker, dean of men. Dr. Rufus A. Lyman, dean of the school of pharmacy, who delivered the principal address, pointed out that even though President Stewart has attained high honors, through his new office he can help pharmacy advance to further heights.

The School of Pharmacy of the University of Buffalo is enjoying a new public address system and a sound recorder, gifts of alumnae. On December 19 activities keys were presented to the following: Raymond P. Griffin, Gloria J. Holmstrom,

(Continued, page 124)

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PENICILLIN TREATMENT OF
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MORE EFFECTIVE THAN EVER

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(Continued from page 122)

Robert W. Larwood, James H. Stobie, and Elaine L. Urban. The seminar for pharmacy students was conducted on January 11 by Frank Emma, Edgar Bellis, Nicholas Gesoalde, and Leslie C. Jayne. Discussion centered around the implications of the Governor's temporary commission on coordination of state activities and the necessity for organization and solidarity of pharmacists to meet continuous challenges to the rights and privileges of the profession.

Professor Freeman P. Stroup, now in his fiftieth year of teaching at the Philadelphia College of Pharmacy and Science, will be the guest of honor at the mid-winter reunion dinner of the Alumni Association of the College on February 23. An oil portrait of Professor Stroup, the gift to the College from the class of 1918, will be unveiled that evening.

The Oklahoma University Pharmaceutical Association is making plans for the 15th annual convention to be held on Friday, March 11, in Norman. A banquet and dance are being planned for the occasion.

Announcement has been made by the University of Illinois Graduate College in Chicago of the availability of ten one-year research fellowships in the fields of medicine, dentistry, and pharmacy. The fellowships carry stipends of \$1200 per year for pharmacy graduates, with exemption from tuition fees. Registration in the Graduate College for credit toward M.S. or Ph.D. degrees is required and appointments cover a calendar year with a one-month vacation. Candidates should indicate the field of research in which they are interested and submit transcripts of their scholastic credits, together with the names of three former science teachers as references. Appointments will be announced about March 1, 1949, with the fellowship year beginning on July 1 or September 1, 1949. Formal application blanks may be secured from the Secretary of the Graduate Committee, 1853 W. Polk Street, Chicago 12, Ill.

"Merits of Modern Drugs" is the theme for the fifth annual seminar lectures for pharmacists sponsored by the Northern New Jersey Branch and the Rutgers University College of Pharmacy. Four lectures at one-week intervals are scheduled as follows: March 2, "Control of Weight," Lloyd K. Riggs, director of nutritional research, National Dairy Research Laboratories; March 9, "Control of Bleeding," Harvey B. Haag, dean, Medical School, Medical College of Virginia; March 16, "Present-Day Concepts of Hypertension," Kenneth G. Koehlstaedt, director, Lilly Laboratory for Clinical Research, Indianapolis General Hospital; March 23, "Sources of Information," Richard A. Deno, professor of biological sciences, Rutgers University College of Pharmacy. The seminar is to be held at the Rutgers University College of Pharmacy and

each lecture will commence at 8 p. m. on the date scheduled. A fee of \$5.00 for the series has been established. All communications should be addressed to Martin S. Ulan, 1 Lincoln Ave., Newark 4, N. J.

Beta Chi chapter of Delta Sigma Phi composed almost entirely of pharmacy students was given its charter recently at Howard College, Birmingham, Ala. Chapters visiting for this event were the University of Alabama at Tuscaloosa, Alabama Polytechnic Institute of Auburn, and Birmingham Southern College of Birmingham.

The weekly two-hour seminars for seniors, pharmacists, and members of the staff are now in their third year at the University of Buffalo School of Pharmacy. Two periods during the month of October were devoted to a discussion of the probable impact of the Pharmaceutical Survey upon the pharmaceutical curriculum.

The University of Utah's new School of Pharmacy is developing an experimental medicinal garden plot on a 100- by 500-foot plot of ground. Dean L. David Hiner states that it will be completed in about two years and a number of medicinal herbs will be grown, many of which never have been fully developed in the United States. Plans call for construction of a laboratory, with curing room, milling room and greenhouse, as well as experimental and observation plots.

A pharmaceutical historical museum has been created at the former home of Louis Dufillio, who was considered one of the first licensed pharmacists in America. The building is located at 516 Chartres Street, New Orleans, La., according to Dr. Edward J. Ireland of Loyola University School of Pharmacy.

A unique plan of cooperation between the College of Pharmacy and the School of Engineering at Columbia University, devised for the purpose of providing men with both pharmaceutical and engineering training for the drug industry, has met with success during the past year, Charles W. Ballard, dean of the College of Pharmacy, announced. Dean Ballard's plan of collaboration was proposed in 1939 but was postponed by the war and a complete program has not yet been worked out. As an example of the success attained he cited the case of one pharmacy student who enrolled in several courses in the School of Engineering. During his enrollment the student drew up plans of a proposed pharmaceutical manufacturing development laboratory which included details for the placement of laboratory equipment, power requirements, and operating information. The student's plan represented a combination of pharmaceutical and engineering knowledge required in setting up and operating a plant project of that type and he was readily placed in a position with the drug industry.

Announcement is made by Dr. Ivor Griffith, president of the Philadelphia College of Pharmacy and Science, that seminars for graduate pharmacists will again be offered by that college early next summer. The 1949 seminar will include not only coverage of modern pharmaceutical practice but also a review of current economic problems in the field. Pharmacists who have graduated from any recognized college of pharmacy may register and rooming accommodations near the college will be arranged for those attending from other cities.

Pharmacy students at the University of Georgia can now participate in a pharmaceutical accounting class through cooperation between the School of Pharmacy and the College of Business Administration. Dean Kenneth Waters of the Pharmacy School says the course is especially designed to aid those students who intend to go into the retail drug business in small towns.

MANUFACTURERS

The Upjohn Company has announced the appointment of Dr. Richard S. Schreiber, as associate director of research at the Kalamazoo, Mich., plant. Dr. Schreiber is a graduate of Wabash College (A.B. '31) and the University of Illinois (Ph.D. '35). Since 1935 he has been employed as an organic chemist by E. I. du Pont de Nemours & Co., Wilmington, Del., serving last as a research supervisor in the experimental station. Dr. Floyd A. Eberly, who has been assistant superintendent of production, is now assistant director of production for the Upjohn Company.

According to an announcement by W. Furness Thompson, vice-president in charge of research, Smith, Kline & French Laboratories of Philadelphia have awarded 73 grants amounting to \$314,761 in 1948, in support of medical research. Twenty-seven of these grants were made to 20 medical schools and the balance to institutes, clinics, and individual investigators.

John Hart, formerly vice-president of Winthrop Products, Inc., has been named head of the newly established New Products Development Division of the Sterling-Winthrop Research Institute. Mr. Hart was formerly director of the department of professional relations of Winthrop-Stearns, Inc.

Patents 2,455,397 and 2,455,398 were granted in December to E. R. Squibb & Sons covering certain preparations of Menadione and derivatives thereof after proceedings in the U. S. Patent Office lasting nearly 10 years. The patents resulted from the work of Dr. S. Ansbacher, formerly of the Squibb Institute for Medical Research, and the late Dr. Erhard Fernholz, also of the Institute.

Major Theodore P. Walker, chairman of the board of directors of Commercial Solvents Corp.,

New York, announced that Austin S. Igleheart, president of General Foods Corp., and Harold H. Helm, president of the Chemical Bank and Trust Co., have been elected to the Board.

Lloyd Brothers, Pharmacists, Inc., manufacturing pharmacists of Cincinnati, has been sold to Robert H. Woodward and associates. Mr. Woodward has been president and treasurer of the corporation since August 1946. Lloyd Brothers, founded by Dr. John Uri Lloyd in 1870, is one of the oldest pharmaceutical manufacturers in the country.

A permanent injunction has been issued against a War Surplus Center of Seattle, Wash., forbidding sale of a nationally advertised shaving cream at less than the minimum resale price established by the manufacturer, or, if the merchandise is damaged, forbidding sale at a lower price unless the goods are advertised as damaged. The court held that the Washington State Fair Trade Act is applicable to trade-marked merchandise bought from the government for resale to the public. The complaint was brought by E. R. Squibb & Sons.

Dr. George E. Farrar, Jr., associate professor of medicine at Temple University, has been appointed Medical Director for Wyeth, Inc. He will continue his post at Temple University and maintain his connection as co-author of the *U. S. Dispensatory*, according to H. S. Howard, president of Wyeth. Dr. Farrar will advise Wyeth management on medical affairs and collaborate with Dr. Joseph Seifter, director of the Wyeth Institute of Applied Biochemistry, on the medical phases of research.

Hoffmann-La Roche Inc. have recently changed their firm name to Organon, Inc. Their new address is Orange, N. J. Personnel promotions include the following: Paul J. Cardinal has been appointed vice-president in charge of the bulk vitamin division; Dr. Max F. Furter, vice-president in charge of pharmaceutical research and production; and Robert A. Hardt, vice-president in charge of sales and advertising.

HOSPITAL PHARMACY

The District of Columbia Chapter of the American Society of Hospital Pharmacists held its December meeting at Mount Alto Veterans Hospital. Dr. Robert Stolar, consultant in dermatology for the Veterans Administration, U. S. Army and the D. C. Health Department, spoke on "The Most Recent Advances in Dermatologic Preparations." Following this talk a motion picture, "Intravenous Solutions, Blood and Blood Plasma," was shown and George Blomquist, special representative for the American Hospital Supply Corp., talked on "Recent Advances in the Field of Intravenous Solutions." After the program the entire group was invited to visit the Mount Alto Hospital Pharmacy.

On January 20 the New Jersey Society of Hospital Pharmacists met at the Rutgers University College of Pharmacy in Newark to install the newly elected officers who are as follows: Herbert B. Falk, president; Anna Richards, vice-president; Eve Weiss, secretary; and Bertram F. Jones, treasurer.

For the third consecutive year the Howard College (Ala.) Department of Pharmacy is offering a course in hospital pharmacy. The course deals with the organization and management of the modern hospital and with the special techniques and procedures employed by the hospital pharmacist. Lecturers who are leaders in the various associated hospital fields will be guest speakers throughout the year.

The American Society of Hospital Pharmacists announced the results of its election on December 21 as follows: Herbert L. Flack, Philadelphia, Pa., president-elect; W. Paul Briggs, Washington, D. C., vice-president-elect; Sister Mary Junilla, Los Angeles, Calif., treasurer-elect. According to a recent amendment to the by-laws, the secretary is nominated by the executive committee and elected annually by the A. S. H. P. House of Delegates. The newly elected officers will be installed at the annual convention to be held in Jacksonville, Fla., Apr. 24-30. As a result of an amendment to the Society's Constitution, a local or regional group of hospital pharmacists numbering ten or more active members of the Society may become an affiliated chapter by conforming to the rules governing such chapters as are established or may be established by the executive committee of the Society.

AT RANDOM

The Second Sheet Supplement to the U. S. P. XIII is now available to all owners of the Pharmacopocia of the United States, Thirteenth Rev., upon request to Adley B. Nichols, secretary, U. S. P. Board of Trustees, 4738 Kingsessing Ave., Philadelphia, Pa.

Speaking to 250 pharmacists at the Brooklyn College of Pharmacy on January 10, Joseph T. Sharkey, majority leader of the New York City Council, said the New York City Board of Health could better carry out its duties if a pharmacist were to fill one of the two posts now occupied by laymen. Of the five Board members, three are doctors and two at present are laymen. Mr. Sharkey said

he had sponsored a resolution in city council last September which would put a pharmacist on the board. The resolution is now in the council committee on general welfare and will come up soon, he said. "The community position which the neighborhood drug stores occupy in the public health of the community should be recognized through equal representation with members of the medical profession on the Board of Health," Mr. Sharkey said. "Public health cannot be improved merely through legislation created in an aseptic vacuum."

Pharmacies and chambers of commerce are the latest to fall under the nationalization ax in Czechoslovakia. The Ministry of Foreign Trade is to take over all chambers of commerce and the nation's central insurance administration will take over the direction of pharmacies, it was announced in Prague on December 29.

Brig. Gen. Edgar Erskine Hume received the Gorgas Award at the annual dinner of the Association of Military Surgeons in San Antonio, Tex. in November. Presentation of the medal and \$500 cash award was made by Everett V. Scott, of Wyeth, Inc. General Hume was cited as the man who first used DDT on a mass scale to check the typhus epidemic raging in Naples, thus protecting our GI's and millions of Italians.

A warning of the danger of accidental poisoning through eating, along with food, some of the new pesticides—DDT, benzene hexachloride, and even 1080, for which there is no known antidote—was recently issued by Dr. James R. Wilson, secretary of the American Medical Association's Council on Foods and Nutrition. The situation calls for "extreme vigilance on the part of all who put out food products and use pesticides in their establishments." Great care in use of pesticides to avoid getting them into food and more knowledge of the effects of small amounts of them on human beings over long periods of time are needed. The danger from DDT sprayed on fruits and vegetables is not too great, food and drug officials claim, because the action of the sun will decompose DDT.

Nearly two million veterans received out-patient treatment by the Veterans Administration during the fiscal year ending June 30, 1948. Treatments averaged three per veteran, or a total of 5,233,680, and about 40% of the total were treated by private physicians, who were paid an average of \$4.18 per treatment.



Philadelphia COLLEGE OF PHARMACY AND SCIENCE

13rd St. and Kingsessing Ave., Philadelphia, Penna. Founded in 1821

Courses of study offered leading to B.Sc. degrees in Pharmacy, Chemistry, Bacteriology, and Biology. Graduate studies leading to M.Sc. and D.Sc. Coeducational.

New A. Ph. A. Members



THE ASSOCIATION EXTENDS A CORDIAL WELCOME TO THE FOLLOWING MEN AND WOMEN WHO WERE ACCEPTED FOR ACTIVE MEMBERSHIP DURING THE MONTH PRECEDING PREPARATION OF THIS ISSUE.

ALABAMA

Howington, Cleve L., Talladega

CALIFORNIA

Ayala, Peter, Hollywood
Edwards, Mrs. Josephine R., Oakland
Feldman, Julian J., Gardena

FLORIDA

Moore, Jack, Jacksonville

ILLINOIS

Besser, Henry A., Downers Grove
Byrne, Emmett R., Oak Park
Gillman, Harold, Chicago
Krivitz, Arnold, Chicago
Perlman, Joseph, Chicago
von Danden, R. Jean, Chicago
Wolman, Walter, Chicago

INDIANA

Bye, G. Wayne, New Albany
Mathes, Vernon W., New Albany
Schultheis, Joseph L., Evansville
Wiese, Mildred M., Indianapolis

KENTUCKY

Bush, Mr. Gayle C., Louisville
Farlong, Thomas J., Louisville
Gardner, Milton E., Louisville
Herpel, Eleanor R., Louisville
Hubbard, Jesse Y., Louisville
Jackson, Winfield S., Louisville
Kahn, Harry, Louisville
Kessel, Yale, Louisville
Lohr, Joel D., Louisville
Montgomery, Ray E., Central City
Rankin, Carl W., Monticello
Reeb, Arthur H., Louisville
Valentine, Vernon, New Castle

MARYLAND

Burns, T. A., Silver Spring

MASSACHUSETTS

Levant, Leo, L., Roxbury

MICHIGAN

Erickson, Ira A., Detroit
Fleming, Daniel R., Detroit
Goyette, Gordon F., Jr., Detroit
Peterson, Zeben R., Detroit
Robbins, Kenneth D., Detroit

MINNESOTA

Becker, Carl J., St. Cloud
Reichert, Rayner J., Albert Lea

MISSOURI

Bosche, George, St. Louis
Haug, Marvin B., St. Louis
Overman, Arthur A., St. Louis

NEBRASKA

Hagel, Mrs. Bette, Omaha
Small, La Verne D., Lincoln
Sprague, Charles H., Omaha

NEW JERSEY

Balaban, Charles, Camden
Borghi, Joseph, Jr., Union City
Cohen, Nathan Y., Elizabeth
Giardina, Antoinette, Hoboken
Johnson, Robert A., Bloomfield
Livingstone, Mrs. Sarah L., Pleasantville
Masci, Joseph N., New Brunswick
Mazlish, Abraham, Bayonne
Narusky, Reuben, Englestown
Olshin, Meyer D., Newark
Parentini, Harold C., Union City
Pellott, James P., Paterson
Poloner, Harry, Newark
Schneider, Maxwell M., Jersey City
Schneider, Phillip C., Jersey City
Selvagn, Herman C., Ocean City
Snyder, Robert S., Montvale
Sparaco, Anthony J., Caldwell
Steffens, Ralph S., Bloomfield
Tricarico, Donato M., Somerville
YaDeau, William E., Union City

NEW MEXICO

Gibbs, Donald M., Albuquerque

NEW YORK

Altbach, Hyman, Brooklyn
Brunman, William, Forest Hills
Cole, Lorene J., Rochester
Creasy, William N., Tuckahoe
Goldner, Lewis R., Syracuse
Hirsch, Samuel, New York
Hyman, Arthur M., Brooklyn
Kelly, John E., Albany
Lang, Harold, Brooklyn
Lange, William M., Albany
Lord, Ralph M., Tannersville
Martens, Seymour, Poughkeepsie
Oscar, Stanley, New York
Poskanzer, Alfred T., Albany
Rosenblum, William, Oneonta
Sackmann, Charles J., Brooklyn
Vigliano, Mario F., Bronx
Zinkoff, Sergei S., New York

NORTH CAROLINA

Barbour, Joseph P., Burlington
Griffin, Ellerbe W., Jr., Kings Mt.
Merriman, William D., Charlotte
Negron, Ida A., Raleigh
Tart, Paul E., Greenville

OHIO

Albaugh, Martin G., South Euclid
Collier, Dorothy E., Cleveland
Davis, George A., Toledo
Fenstermaker, D. E., Toledo
Lautsbaugh, David J., Mansfield
Moffatt, Stanton N., Cleveland
Rosemary, Arthur J., Cincinnati
Stoller, Nathan, Cincinnati

OREGON

Dunn, L. P., Portland
Gier, Herman J., Phoenix

PENNSYLVANIA

Fraser, William M., McKeesport
Getz, Howard A., Pittsburgh
Klopp, Marlen J., Richland
Marini, Orlando, Arnold

Nesbit, Robert H., Pittsburgh
Raiser, Carl K., Philadelphia
Secreto, Mary Jane, Vandergrift
Weiss, Saul S., Philadelphia
Ziemlak, Leo W., Pittsburgh

SOUTH CAROLINA

King, Valdane J., Rock Hill

TEXAS

Glass, James A., Beaumont
Hodnett, Hill J., Dallas
Westerburg, George F., Waco

VIRGINIA

Allen, William T., Richmond
Hagood, Ralph J., Richmond
Shiner, H. H., Petersburg

WASHINGTON

Richey, James R., Seattle

WEST VIRGINIA

Masterson, Ray L., Parkersburg

WISCONSIN

Brunner, E. J., Eau Claire
Mahnke, Allen, Fond du Lac
Schoenknecht, George, Eau Claire
Sister Agnella, O.S.F., Green Bay

U. S. POSSESSIONS

Bures, Carmen C., Santurce
U, Puerto Rico
Garcia, Jenaro E., Hatillo, Puerto Rico
Mendez, Mr. Lumen M., Lares, Puerto Rico

FOREIGN

Ibarra, Dr. Moises S., Caracas, Venezuela
Maday, Wolodomyr W., Edmonton, Alberta, Canada
Nadeau, H., Montreal, Canada
Suarez-Llata, Dr. Bertha S., Havana, Cuba

NNE

MONTHLY DRUG INDEX

.....from p. 107

1-cc. vials each packaged with six 0.9-cc. vials of 0.5% procaine hydrochloride in isotonic sodium chloride solution. Preserved with chlorobutanol 0.4% as a sterile diluent.

**ISOPENTAQUINE GENERIC NAME FOR
(8-[4-ISOPROPYLAMINO-1-METHYL
BUTYLAMINO]-6-METHOXYQUINOLINE)**

The Council was requested by the Malaria Study Section of the U. S. Public Health Service to consider recognition of the generic term isopentaquine for the antimalarial compound known as Sn 13,274 (8-[4-isopropylamino - 1 - methylbutylamino] - 6 - methoxyquinoline). As a result of its deliberation, the Council voted to recognize the stated generic term. The Council calls attention to the fact that the drug will be available only as the oxalate salt, which should be designated as isopentaquine oxalate. In view of the fact that the base content of the salt is more uniform than the oxalate content, the labeling for any marketed product should bear a statement such as "Each tablet corresponds to isopentaquine base."

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Immune Serum Globulin (Cutter Laboratories).....	76
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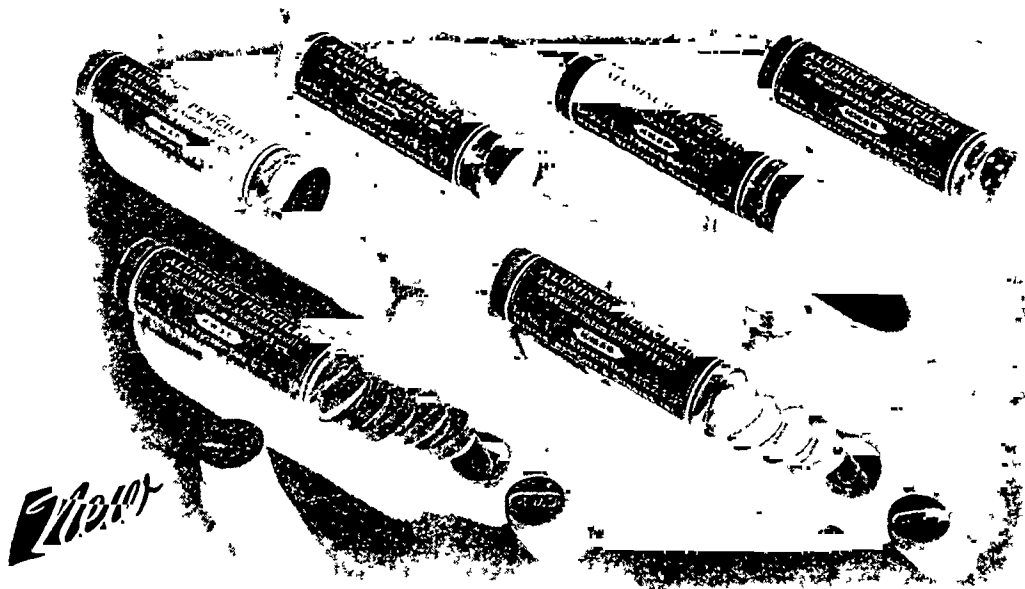
**FOR MEDICINAL
AND PHARMACEUTICAL USES**

MADE FROM OUR OWN
CALIFORNIA CITRUS FRUITS

WIRE OR WRITE FOR
PRICES AND INFORMATION

**CALIFORNIA FRUIT GROWERS
EXCHANGE**

Products Department, Ontario, Calif.



Aluminum PENICILLIN*

ORAL TABLETS

Aluminum Penicillin Oral Tablets are clinically effective in the treatment of penicillin susceptible infections.

Containing the almost insoluble trivalent aluminum salt (not a mixture), they provide for maximum utilization of the dose administered.

Low solubility of Aluminum Penicillin renders it much less liable to inactivation in the stomach. Destruction in the intestinal tract is inhibited by the addition of sodium benzoate. Slow conversion to a readily absorbed form in the more alkaline conditions of the intestinal tract enhances clinical effectiveness.

Aluminum Penicillin is not toxic in doses far exceeding those used therapeutically and does not cause gastric disturbance.

Detailed information will be sent to druggists on request.

Supplied in vials of twelve tablets each containing Aluminum Penicillin, 50,000 units, and sodium benzoate, 0.3 gram.

* Patent applied for

Oral Tablets

Now Council Accepted



HYNSON, WESTCOTT & DUNNING, INC.



**BALTIMORE
MARYLAND**

NNB**MONTHLY DRUG INDEX**

.....from p. 107

1-cc. vials each packaged with six 0.9-cc. vials of 0.5% procaine hydrochloride in isotonic sodium chloride solution. Preserved with chlorobutanol 0.4% as a sterile diluent.

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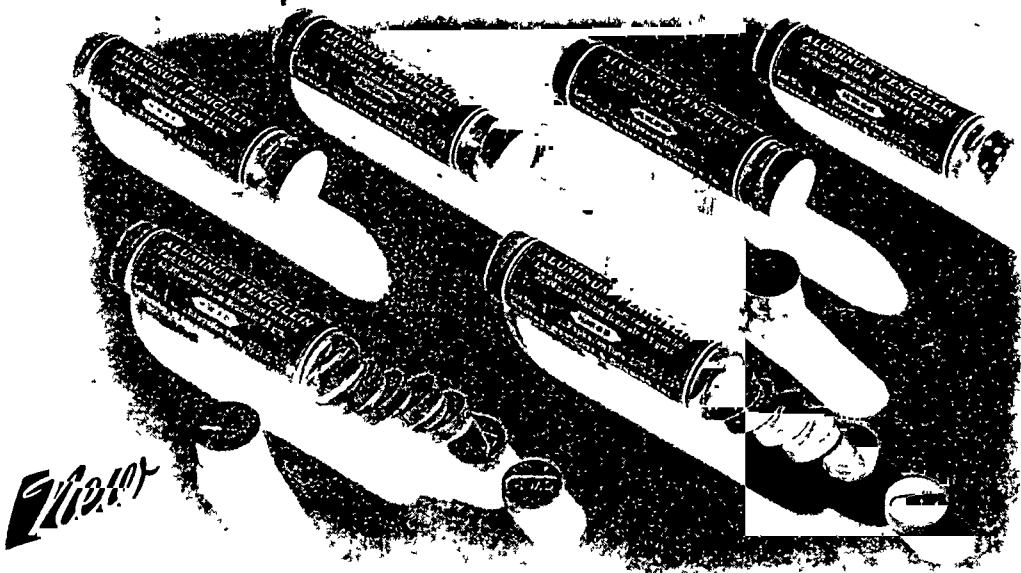
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* Patent applied for



Now Council Accepted

Oral Tablets

HYNSON, WESTCOTT & DUNNING, INC.



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MARYLAND**

LUTOCYLOL LINGUETS

. . . a unique administrative
form of progesterone to bring
you more R sales!

You can count on a steady growth in high-profit R sales of Lutocylol Linguets—thanks to a *double* advantage of this female sex hormone product:—

1. *Lutocylol is the most potent non-injectable progestational substance (anhydrohydroxyprogesterone).*
2. *The Linguet form provides the most efficient and economical way to administer this female sex hormone.*

The Linguet is a special Ciba development. Placed between gum and cheek, or under the tongue, the Linguet dissolves *slowly*, with maximum absorption of the hormone directly into the systemic circulation. Inactivation and destruction in the liver and digestive tract are so greatly reduced that dosage need be only about one-half that required with ingested tablets.

For instance, with Lutocylol in Linguet form, only 10 mg. daily or every other day are sufficient for progesterone maintenance in threatened abortion.

Lutocylol Linguets are being sampled to leading doctors in your territory. Stock them for growing turnover and repeat R sales.

ISSUED: *Lutocylol Linguets of 10 mg. in bottles of 30 and 100.*

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H. W. Youngken Jr.

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**your heart
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Every day it ...

BEATS 100,000 TIMES
PUMPS 5,000 GALLONS OF BLOOD

PROTECT YOUR HEART

See your doctor for regular physical checkups

A HEALTH EDUCATION PROGRAM JOINTLY SPONSORED BY
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... it continues to
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profits

YES, more of those prescription-building *Dayamin* characters are on the way! Soon your physicians and dentists will meet these intriguing new creations, and more, in the pages of their professional journals, in "What's New" and in compelling full-color broadsides. • These characters not only tell — they really *sell*! They are helping make potent *Dayamin* capsules the most discussed—and prescribed—multiple-vitamin product in the ethical field.

In response to a single broadside mailing

recently more than 1 out of every 6 physicians and 1 out of every 3 dentists in the U. S. requested professional samples of *Dayamin*. As the persuasive power of this promotion becomes increasingly evident, we say again, with added point and power—day after day, it's *Dayamin*! • Remember, each easy-to-swallow *Dayamin* capsule provides optimum daily adult requirements of six essential vitamins, plus pyridoxine and pantothenic acid. See that your shelves are amply stocked!

Abbott



*A new antihistamine
ointment for
prompt relief of pruritus*

New Thephorin Ointment, with its rapid antihistamine and antipruritic effect, usually brings prompt relief in the treatment of pruritus, allergic dermatoses and insect bites.

Thephorin Ointment contains five percent Thephorin (the new and different antihistamine) in a carbowax (polyethylene glycol) base. Chemically Thephorin (brand of phenindamine) is 2-methyl-9-phenyl-2,3,4,9-tetrahydro-1-pyridindene hydrogen tartrate.

Thephorin Ointment is supplied in 1½-oz. collapsible tubes and 1-lb. jars. Stock now. It is supported by extensive detailing, direct mail and medical journal advertising.

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Ointment

'Roche'

Dr. Robert Helig Library
Medical College
27540. MAR 20



As the Incidence of Scabies Rises

The virtues of Kwell Ointment are discussed in the following articles:

- 1 Wooldridge, W E The Gamma Isomer of Hexachlorocyclohexane in the Treatment of Scabies, *J Invest Dermat* 10 363 (May) 1948
- 2 Nieldman, M L Treatment of Common Skin Diseases in Infants and Children, *J Pediat* 32 566 (May) 1948.
- 3 Cannon, A B, and McRae, M E Treatment of Scabies, *J A M A* 138 557 (Oct 23) 1948
- 4 Goldman, L, and Feldman, M D Human Infestation with Scabies of Monkeys, *Arch Dermat & Syph* 59. 175 (Feb) 1949
5. Fox, E C, and Shields, T L Résumé of Skin Diseases Most Commonly Seen in General Practice, *J A M A* 140 763 (July 2) 1949.

The specific, positive scabicial properties of Kwell Ointment are employed to particular advantage during the warm summer months with their concurrent increase in the incidence of scabies. Kwell Ointment usually eradicates scabies infestation with a single application. Its action is prompt, and secondary dermatitis or skin irritation rarely follows its use. Its extreme blandness makes its application permissible even in the presence of secondary infection.

Kwell Ointment owes its scabicial action to the gamma isomer of benzene hexachloride—0.5% in a vanishing cream base. This parasiticide is specifically lethal for *Sarcoptes scabiei* yet in the concentrations employed it is nontoxic to man. Available at your wholesaler in 2 oz. and 1 lb. jars.

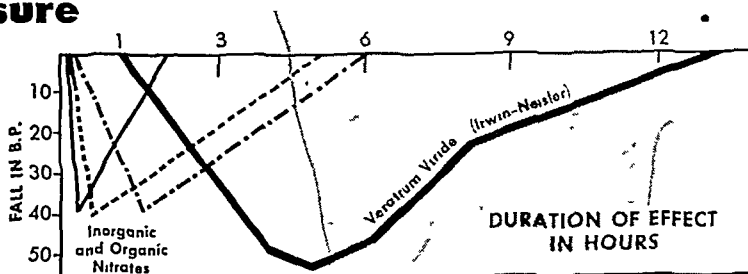
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IN ACUTE AND CHRONIC

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Bacitracin-Nasal-C.S.C. provides the antibiotic properties of bacitracin and the vasoconstrictor influence of desoxyephedrine in an isotonic aqueous vehicle. It finds frequent application in acute and chronic sinusitis which so commonly complicate coryza. Bacitracin destroys many of the pathogens which flourish in the nasal passages and accessory nasal sinuses thus providing a means of directly combating infections in these structures. Desoxyephedrine by its local vasoconstrictor action improves ventilation and drainage, and enhances the effect of the bacitracin. Bacitracin-Nasal-C. S. C. may be administered by means of a nebulizing spray or by the Parkinson lateral head-low position. Available at your wholesaler in $\frac{1}{2}$ ounce bottles.

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Product descriptions may be clipped and filed on three- by five-inch cards. These are also indexed for quick reference in the "Monthly Drug Index" appearing on the last page of each issue. A product is described in this column for the information of pharmacists who may be asked by physicians to stock the drug, or who may receive professional inquiries about it. A listing does not imply evaluation or recommendation by the Association, nor does omission of any product have significance concerning its merit.

ARTANE TRIHEXYPHENIDYL TABLETS

Description: Tablets containing 2 and 5 mg. of 3-(1-piperidyl)-1-phenyl-1-cyclohexyl-1-propanol hydrochloride.

Form Supplied: Bottles of 100 and 1000 tablets.

Action: Treatment of Parkinson's disease.

Administration: As determined by the physician to control the palsy symptoms.

Source: Lederle Laboratories Division, American Cyanamid Co., Pearl River, N. Y.

BENZEDREX INHALER

Description: Inhaler containing Benzedrex (1-cyclohexyl-2-methylaminopropane).

Form Supplied: Single plastic tubes.

Action: Shrinkage of nasal mucosa without central stimulation.

Administration: As often as desired, but usually once an hour is sufficient.

Source: Smith, Kline and French Laboratories, Philadelphia 1, Pa.

CHLOR-TRIMETON MALEATE

Description: Tablets containing 4 mg. of chlorophenpyridamine maleate.

Form Supplied: Bottles of 100 and 1000 tablets.

Action: Adjunctive therapy in allergic conditions responding to antihistaminic therapy.

Administration: 2 to 4 mg. 3 or 4 times daily.

Source: Schering Corp., Bloomfield, N. J.

DESOXYCORTICOSTERONE ACETATE

Description: Ampuls containing 5 mg. of desoxycorticosterone acetate per cc. of oil.

Form Supplied: 1-cc. ampuls in boxes of 12, and 10-cc. vials.

Action: Treatment of Addison's disease, shock, etc.

Administration: As determined by the physician.

Source: Schieffelin & Co., 16-30 Cooper Square, New York 3, N. Y.

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Description: Tablets containing 350 mg. of ferrous sulfate, 2 mg. of thiamine hydrochloride, 2 mg. of riboflavin, 10 mg. of nicotinamide, 1 mg. of pyridoxine hydrochloride, 2 mg. of pantothenic acid, 50 mg. of ascorbic acid, and 500 mg. of liver concentrate (boiling water extract).

Form Supplied: Bottles containing 100, 500 and 1000 tablets.

Action: Treatment of secondary and nutritional anemia.

Administration: Three tablets daily.

Source: Abbott Laboratories, North Chicago, Ill.

VI-ALPHA

Description: Capsules containing 50,000 units of vitamin A and 36.8 mg. (50 I. U.) of *d*-alpha-tocopheryl acetate (vitamin E).

Form Supplied: Bottles containing 100 and 1000 capsules.

Action: Source of vitamins A and E, the latter being shown to increase the utilization of vitamin A in experimental animals.

Administration: As determined by the physician.

Source: Lederle Laboratories Division, American Cyanamid Co., Pearl River, N. Y.

VIBEX

Description: Fortified vitamin B extract in liquid form containing in each fluidounce vitamin B₁, 12 mg.; vitamin B₂, 24 mg.; vitamin B₆, 6 mg.; nicotinamide, 120 mg.; and pantothenic acid, 12 mg. It is miscible with orange juice, milk, water, infant formulas, etc.

Form Supplied: 4-fl.oz. bottles.

Action: Source of vitamins B, especially for pregnant and nursing women and in convalescence.

Administration: As directed by the physician.

Source: Parke, Davis & Co., Detroit 32, Mich.

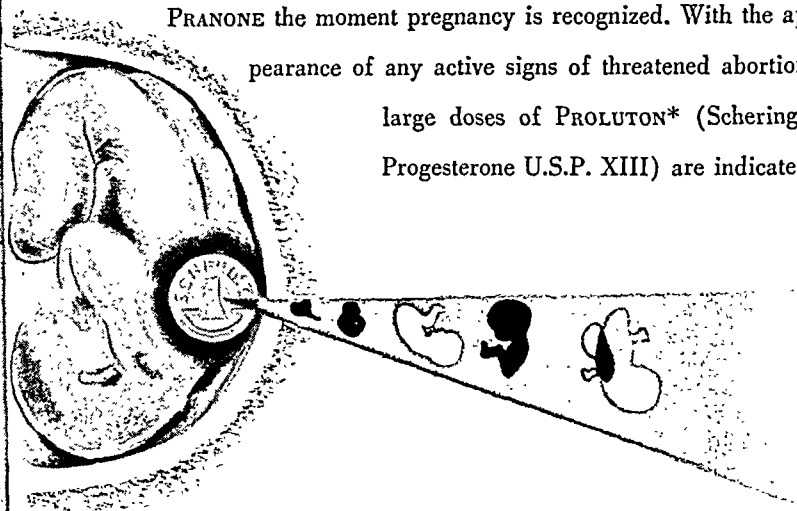
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large doses of PROLUTON* (Schering's Progesterone U.S.P. XIII) are indicated.



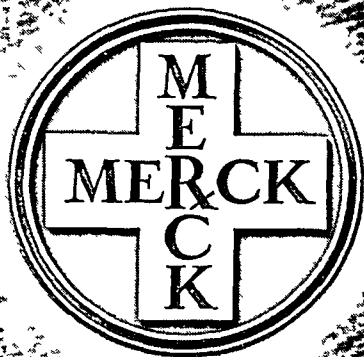
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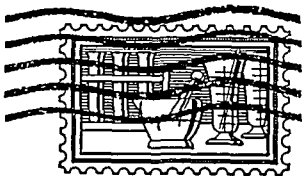
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Letters:

Are All Pharmacists Equal?

Sirs:

I am perhaps a bit late in expressing my opinion about Mr. Dewey Stratton's letter, but it is only recently that I reviewed the February number of the Practical Pharmacy Edition of *THE JOURNAL*.

I agree with Mr. Stratton when he opposes issuance of prescription blanks to physicians and the more so if the prescription blanks bear the pharmacist's name. But our agreement ends here, as I disagree with all of Mr. Stratton's other opinions.

It is not, I admit, within the doctor's prerogatives to "select" the patient's pharmacist, but he has the right to advise him on the matter, and, I think, sometimes he ought to.

The fact that all pharmacists have the same State license does not in the least prove that all pharmacists are equal. We do not believe all physicians to be equal, nor are all lawyers, all engineers, or all men of any profession. We do not believe all drivers, or all carpenters or all tailors to be equal. Why should all pharmacists be equal?

One pharmacist may keep abreast of modern medical, pharmaceutical and scientific trends, and another one may not; one may invest money in new apparatus, not compulsory under State regulations, and yet very useful (emulsifier, mixers, ointment mill, and so on), and another one may not; one may "lose" his time to experiment with new formulas or procedures for compounding (for instance, work on new ointment bases) and another one may not; one always may have in stock the newest medicines, as a policy, and another one may wait until these new medicines are called for several times.

Just to give you a few examples, we have, upon request from their physicians, prepared for some of our patients: Linoleic acid (vitamin F) from linseed oil, sodium morrhuate from cod liver oil, and benzyl alcohol from benzyl benzoate. As there was no time to wait for arrivals from our usual sources of supply, we had to compound these preparations ourselves.

Only wishful thinking can place all men in a profession on the same level. And it is good it is so. It is precisely because of these differences that free enterprise is still available. Let pharmacists try to improve in knowledge, in apparatus, in service,

in better working conditions, in experimentation, and so on. Results will speak for themselves.

Beyrouth, Lebanon

E. E. FARIH

Compulsory Medical Care

Sirs:

Creeping across our land today is an idea as insidious, as deadly in portent, as the smog over Donora. Gaining momentum of late, it is heard more and more over the radio and in the newspapers. Frankly, any professional man should be alarmed. I am referring to the proposed "Socialized Medicine." Although it has been labeled many less offensive names, it is still the Government's invasion into a field where it should never be.

It would mean that pharmacy and medicine would be the first to fall under this plan to destroy free enterprise. This idea has no place in a free America. If this thing is permitted to come to pass, indeed there will be no "free America." Eventually, incentive would be destroyed; young men and women would have no encouragement to enter into these professions already suffering an acute shortage.

If the Government enters into medicine, gone is the need for the sale of T. B. Christmas seals, the cancer drive, the March of Dimes and countless other agencies that benefit through the generosity of free Americans. It would take away and destroy something fine and good in the individual.

With the present welfare setup the country over, charity organizations, free clinics and medical care available, if any person suffers today for lack of medical attention, it is because he wills it. America's heart is as big as America herself. Let's keep it that way. It is time a start is made to stop this thing before it is too late. There is no reason for the professions to become whipping boys for politics and politicians.

Winchester, Ind.

HOMER J. WALTZ

Journal Treasured by Finns

Sirs:

It did my heart good to see the *A. PH. A. JOURNAL* in the local society's library (Helsinki, Finland), and, I might add, they treasure it very much.

American Legation
Helsinki, Finland

B. AABEL

Appreciation

Sirs:

I appreciate what the ASSOCIATION is doing for pharmacy as a profession and hope that I may have an active part in it in the near future.

Gainesville, Fla.

JOHN E. WINTER

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Dear Doctor:

Some so-called "therapeutic" mixed vitamin formulas contain only maintenance dosages. Some include vitamins for which there is no established need in man.

When we named THERAPEUTIC FORMULA Vitamin Capsules SQUIBB four years ago, we wished to emphasize that they represented a new concept in mixed vitamin therapy--the introduction of truly therapeutic dosages of the individual vitamins essential in human nutrition.

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A careful check in prescription stores throughout the country reveals that only about half the prescriptions written for "Therapeutic Formula" specify any brand. The typical prescription calls for "Capsules Therapeutic Formula".

If the manufacturer's name is omitted from the prescription, the pharmacist is at liberty to fill it with any capsule he has on hand. Yet the mixed vitamin products sold as "Therapeutic Formula" vary widely (1) in the number of vitamins they contain and (2) in their potency. Therapeutic Formula Squibb, however, is the clinically proved, balanced formula as recommended by Jolliffe (J.A.M.A. 129:613, 1945).*

From now on, THERAPEUTIC FORMULA SQUIBB will carry the additional designation--THERAGRAN. When you specify this trademarked name--THERAGRAN--your patients are assured of truly therapeutic dosages of the individual vitamins essential in human nutrition.

THERAGRAN is now available through all retail pharmacies--your prescriptions can be filled promptly. When you wish to prescribe the Squibb Therapeutic Formula, please specify as Caps. Theragran.

Very sincerely,
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P. S. For identification, the new THERAGRAN Capsule has two black bands around the middle. Bottles of 30 and 100. 

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is the right to engage in fair competition.

Out of competition has come the unceasing search for
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So long as free enterprise endures,
scientific progress will continue and medical care improve.

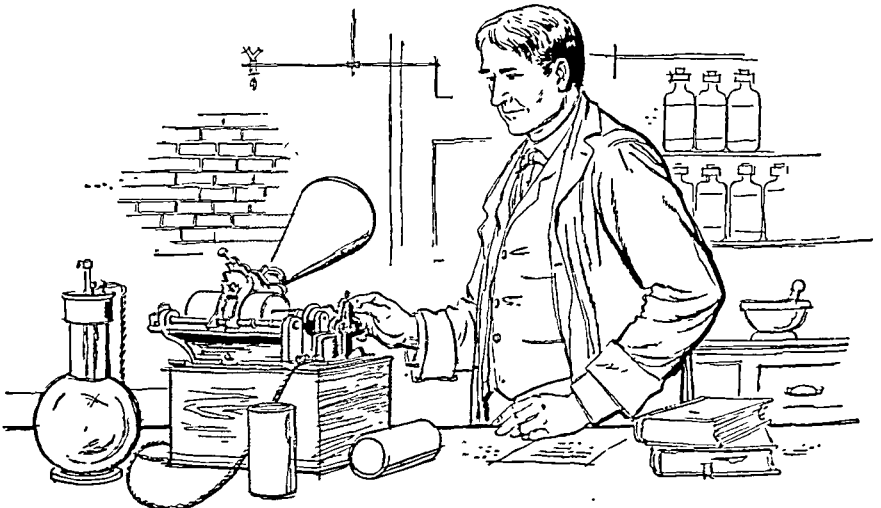
In order to avoid the duplication of brands and sizes,
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The fairness of the Lilly Policy,
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AMERICAN PHARMACEUTICAL ASSOCIATION



VOL. X. NO. 9
CONSECUTIVE NO. 17

Practical Pharmacy Edition

SEPTEMBER, 1949

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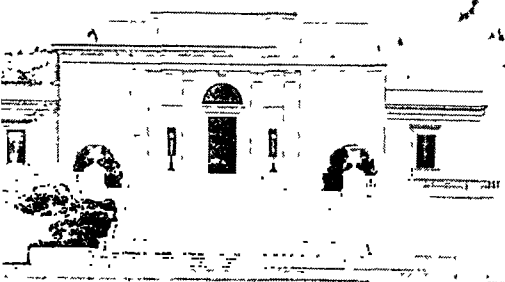
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STRAIGHT FROM HEADQUARTERS



By **ROBERT P. FISCHER**, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

N. F. IX Conference

SO AS to give anyone who so desires, an opportunity to present criticisms or suggestions with reference to the monographs that are to appear in N. F. IX, the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION has arranged for a general conference on the contents of N. F. IX which every interested individual is cordially invited to attend. This conference will be held at the Statler Hotel in Washington, D. C., on Saturday, October 8, at 10 A.M.

To the extent that interested persons have made their desires known, the Chairman of the Committee on the National Formulary has made galley proofs and page proofs of the N. F. IX available and a large number of individuals have been reading these proofs and have offered their suggestions to the Committee. All of these suggestions have been given careful consideration. In view of the fact that the National Formulary Standards for Drugs are the official standards for these drugs under the Federal and State Food, Drug, and Cosmetic Acts, the AMERICAN PHARMACEUTICAL ASSOCIATION desires to make sure that every interested individual or organization has had an opportunity to review these Standards in advance of their final publication. That is the main purpose of the general conference.

If any pharmacist, physician, or other interested individual desires copies of the proof of any particular monograph, it will be supplied upon request in advance of the conference or at the conference. The list of proposed additions to the National Formulary IX was published on pages 184-

185 of the March, 1949, issue of THIS JOURNAL.

It is expected that the members of the Committee on National Formulary will be in attendance at the general conference on October 8 and they will give careful consideration to any suggestions at that time.

Those who are unable to attend this conference in person may submit suggestions in writing to Dr. Justin L. Powers, Chairman of the Committee on National Formulary, 2215 Constitution Ave., Washington, D. C.

Diabetes Detection Week

THE week of October 10-16 has been set aside by the American Diabetes Association as Diabetes Week. The objective is to focus attention upon diabetes during this week with special reference to the detection of the estimated one million unknown diabetics.

The American Diabetes Association has requested pharmacists to do their share in detecting those who are afflicted with this disease so that they may be helped to longer life and better health.

Pharmacists may be contacted by medical societies or by local branches of the American Diabetes Association with the suggestion that they carry suitable displays in their shop windows during the week of October 10-16 and that they distribute copies of a leaflet urging those who have not been tested by their physicians to arrange for such test or to make a simple test of their own urine for the purpose of determining whether medical attention is necessary.

While home testing is one of the suggestions to be made through pharmacists to

the public, this should not take the place of a periodic health examination by a competent physician. Early diagnosis and proper medical care for anyone showing symptoms of diabetes is an important factor to preclude other complications.

The American Diabetes Association will be glad to supply circulars to pharmacists for distribution. To obtain these, address the American Diabetes Association, Inc., One Nevins St., Brooklyn 16, N. Y.

Curbing the Greatest Killer

ON PAGE 530 of THIS JOURNAL, Dr. J. C. Van Slyke, director of the National Heart Institute of the U. S. Public Health Service, tells of the problems of heart disease. This article is timed as a general review of the problems and plans which have led to concerted methods of combating this predominant cause of death among the people of the United States today.

On page 560 there appears the first of a series of bi-monthly articles on heart disease, which are intended to educate pharmacists and their assistants on the types of complaints which may have a bearing on the condition of the individual's heart and vascular system. It will be made clear in these and subsequent articles that early diagnosis and prompt treatment by competent physicians often lead to extension of the life span and make the victims of heart disease very comfortable.

An inestimable amount of good has been accomplished by the educational work so far performed through the cooperation of the U. S. Public Health Service and the AMERICAN PHARMACEUTICAL ASSOCIATION in these matters. In addition, the pharmacies of the nation have received much greater recognition on the part of health officers, physicians and the public as health education centers.

Those members of the ASSOCIATION who have signified their interest in these health programs will soon receive the first of a series of counter card displays directed to the public and an educational message directed especially to pharmacists for posting in the prescription room.

If any of our readers are not now receiving the bimonthly educational material on heart disease, a request addressed to the ASSOCIATION's office at Washington will assure prompt delivery of this material.

U. S. P. Committee Members

NOW comes the decennial task of selecting competent persons to revise the U. S. Pharmacopœia in the decade beginning with 1950.

The Executive Committee of the U. S. P. Revision Committee has determined that the forty non-medical members of the Revision Committee should include experts in the following categories: analytical chemistry, biochemistry, inorganic chemistry, microanalysis, general organic and physical chemistry, reagent experts, steroid chemistry vitamins, volatile oils, antibiotics, bacteriology, immunology, virology, sterilization, endocrinology, microbiology, pharmacology, statistics, dermatologic and external preparations, drug extractives, hospital pharmacy, liquid and miscellaneous preparations, parenteral solutions, prescriptions, tablets and capsules, pharmacognosy, morphology and taxonomy.

Most of pharmacy's representatives on the U. S. P. Revision Committee will be drawn from the faculties of colleges of pharmacy, the research and control laboratories of the drug industry and a few from hospital and private pharmacies and from private or governmental laboratories. National and state pharmaceutical associations as well as colleges of pharmacy should make careful selections of eligible persons for nomination to the Committee of Revision.

There are special forms available on which the qualifications of nominees can be set forth and these have been circulated to organizations entitled to send delegates to the U. S. P. Convention.

Additional forms can be obtained from Dr. Adley B. Nichols, Secretary of the Nominating Committee, 4738 Kingsessing Ave., Philadelphia 43, Pa. The completed recommendation form should be returned to Dr. Nichols. State pharmaceutical associations should also be giving serious thought to the selection of their list of delegates to the U. S. P. Convention which will be held in Washington, D. C., on May 9 and 10, 1950, the week after the 1950 A. P. H. A. Convention in Atlantic City. The delegates elect the officers of the convention and the Revision Committee.

Outstanding members of state pharmaceutical associations, who have an interest in U. S. P. standards and procedures, should be chosen for these important

THE PROBLEM OF HEART DISEASES



By C. J. VAN SLYKE, M. D.

Director, National Heart Institute
National Institutes of Health
Bethesda, Md.

ANCIENT medical authorities considered the heart immune to all disease. Only the suffering of the soul, they believed, affected the heart. Today a considerably different view is held by those concerned with health and medical problems. Diseases of the heart and circulation are today our number one public health problem. Awareness of this is

This article supplies background information of particular interest to pharmacists who are cooperating in the year 'round health information program conducted cooperatively by the American Heart Association, the U. S. Public Health Service, and the American Pharmaceutical Association. The first of a series of editorials on heart disease will be published in this issue of *The Journal*. These editorials will appear bimonthly under the department heading, "The Public's Health—Your First Concern." For No. 1 in the series, see page 560.

evidenced by the increasingly widespread publicity being given by newspapers, magazines, and radio to the mortality rate and to the investigation, control, and treatment of heart ailments.

The scope of the heart problem is one of ever-increasing magnitude, embracing a larger segment of our population with each passing year. The importance of this problem should be of concern to every thoughtful citizen. It is of particular concern to the pharmacist, who is a most important guardian of health in the community.

It is most gratifying then to know that the AMERICAN PHARMACEUTICAL ASSOCIATION is now joining the American Heart Association and the National Heart Institute of the U. S. Public Health Service in their fight against heart diseases, continuing in 1949-1950 its program of health information begun with the cancer program last year.

It is only logical that greater emphasis in public health issues is now being given to the so-called "degenerative diseases." Although unsolved problems still exist with respect to tuberculosis, pneumonia, infantile paralysis, and other infectious diseases, our mortality

figures clearly point the direction in which our main efforts now need to be channeled. Based on the latest figures available, heart diseases, cancer, and nephritis—all associated with degenerative processes—are our greatest disease killers and therefore pose the greatest public health problems.

Heart diseases are assuming a greater and more conspicuous role than ever before in our nation's disease picture. Today more than one in every three deaths in our population is due to a disease of the heart or circulation. While accurate figures are not available, there are at least four million individuals in the United States suffering from some heart ailment, with some estimates placing the total at two or three times this number. At least 152,000,000 work days lost every year, it has been estimated, is the economic price our country must pay as a result. A rough but conservative calculation of the productivity value lost would place the sum at more than a billion dollars. Inestimable, however, is the suffering, shock, and tragedy accompanying these conditions.

Five Principal Heart Conditions

Although medical science has classified more than 20 types of heart disease capable of causing death, there are principally five types which account for this grim picture. Congenital malformation, due to the failure of the heart to develop properly during the prenatal period, and rheumatic heart disease, a condition frequently left in the wake of rheumatic fever, are the two heart condi-

A close-up view of physician making an electrokymographic examination. Note electron photo multiplier tube in center of fluorescent screen.



Among important research work are studies investigating and evaluating instruments which will aid the physician in diagnosing heart conditions. The electrokymograph (shown above) was developed cooperatively by Temple University and the U. S. Public Health Service for this purpose. Using a highly sensitive electron photo multiplier tube, it records the movements of the heart's borders as blood is pumped through the body. Scientists perfecting the instrument hope it will supply the physician with an early case-finding tool which will detect variations from normal long before a serious or fatal heart attack occurs.

tions encountered in childhood. Syphilitic heart disease, while appearing most often in middle age, is usually a late result of a syphilitic infection contracted in early adult life.

The remaining two heart conditions of outstanding importance are hypertension, where prolonged high blood pressure of an unknown origin has affected the heart, and coronary arteriosclerosis, a hardening of the nutrient arteries supplying the heart. While the former types are of developmental or infectious origin, these latter conditions, although encountered occasionally in younger people, occur most frequently in middle and late life and are therefore usually associated with the degenerative process of aging.

Factors Influencing Mounting Mortality

It is only within the past forty to fifty years that diseases of the heart have gained the prominent position in our disease and mortality picture they now hold. Today there are few among us who do not know of some relative or friend suffering from a heart ailment.



A partial accounting for this can be made by examining the two major and important trends evident since the turn of the century. One has been the increasing reduction in the number of deaths due to the infectious diseases. Before the turn of the century these diseases took the heaviest toll in lives, striking particularly at the age groups under 35. Today, through immunization, better sanitation, and with the aid of the new drugs, the sulfonamides and the antibiotics, the problem of the major infectious diseases is now on the road to control.

The second major trend that has an important bearing on the mounting number of heart deaths is the increasing average life expectancy of the individual today, due in

thereby helping to prolong life), a considerable problem and of tragic import is the number of heart conditions encountered in the younger age groups.

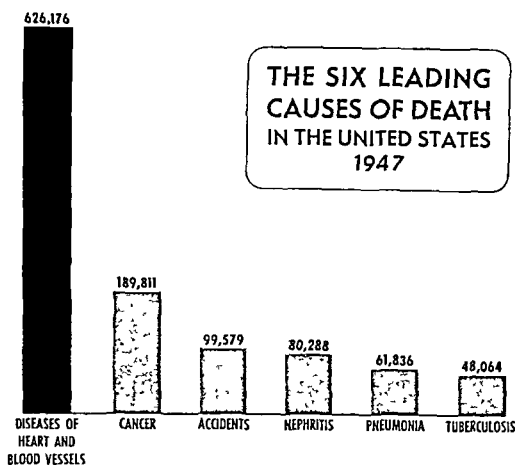
Rheumatic fever which results in rheumatic heart disease—if we exclude accidents—is today the leading cause of death in the United States between the ages of 5 and 19 years and ranks second between 20 and 25 years. According to statistics based on a study of rheumatic fever patients at the Good Samaritan Hospital in Boston, approximately one in every five children who developed rheumatic fever died within ten years. Not less than a half million children of school age (5 to 15 years) in this country, it has been estimated by the Children's Bureau of the Federal Security Agency, have rheumatic heart disease. The starkness of this menace to children is not lessened by its after effects—the debilitation and crippling that follow frequently in later life as a result of this disease, childhood's greatest enemy.

A tragic occurrence each year, of intimate knowledge to most of us, is the increasing numbers of men active in the professions, the sciences, and in business, between the ages of 35 and 50, who are cut short in mid-career by fatal heart episodes due to coronary heart disease. Impossible to measure in economic terms, this loss of valued experience and mature ability frequently comes when the victim is just beginning to make his richest contribution to society.

A New Outlook

The hopelessness of this cardiac picture is not altogether unrelieved. Although in most instances all that can be done is to relieve symptoms and to lessen complications (measures which do prolong life and contribute to productive years), medical science is making steady progress in seeking the causes and cures of the various heart conditions. Today, as a result of these efforts, there are forms of heart disease which can be arrested, some reversed, and some even cured. This is in direct contrast to the negative attitude assumed by the majority of medical men 30 years ago. A new outlook of hope now prevails where before the old psychology of fear dominated.

Although there are many acute and subtle cardiac puzzles confronting medical science in respect to the major heart diseases, essentially these conditions pose three great problems.



part to the conquest of the infectious diseases, but stemming also from better nutrition, improved personal hygiene, and higher standards of living. This has resulted in a relatively larger number of our population living well beyond middle age into the period of life when heart and circulatory ailments predominate as a cause of death.

This predominance of heart diseases in the older age groups can be readily grasped from a Massachusetts chronic disease survey which showed that the prevalence of heart disease between the ages of 40 and 80 approximately doubled every ten years, with the increase even more rapid for disabling heart conditions.

Younger Age Groups Affected

Although the important increases in heart diseases are found in the upper age groups (which may be indicative, from a defensible standpoint, of the great strides by medical science in combating infectious diseases and

These are (1) how to prevent heart diseases in children; (2) how to reduce—and if possible prevent—the number of deaths in early and middle adult life caused by degenerative heart disease; and (3) how to prolong and make more useful the lives of the aged with heart conditions. All of these great problems involve finding causes, which in turn means more intensified research.

Our most important need in combating the menace of heart disease is new knowledge. We need to broaden the base of our knowledge—and at a faster rate. This can be accomplished only through greater support of research and the development of our research potential from which research activity must spring and grow. Fortunately, organizations and support are now at hand to help, as a result of which the scale of activity, both in the laboratories and through fellowships, is constantly being stepped up as this support is made available.

Non-Federal Support of Heart Research

This assault on heart diseases through basic research is being mounted from two directions—private and voluntary organizations set up to collect and administer funds from private sources; and public agencies administering Federal funds made available by Congress. These various agencies have been created in response to the widening recognition of the needs in this field of health.

The recent reorganization of the American Heart Association from a small scientific association to that of a national voluntary health agency that includes lay people in its membership and on its governing bodies has been an important factor in the development of public support for the campaign against heart diseases. As a result of its successful 1949 campaign, the American Heart Association recently awarded \$250,000 for studies in heart diseases and for research fellowships, while local heart associations throughout the country contributed approximately \$500,000 in support of research in medical institutions in their localities.

The Life Insurance Medical Research Fund, formed by 148 life insurance companies in 1945 to promote basic research in the medical sciences, announced at its outset that it would devote its entire annual fund for the first five years to cardiovascular research. Approximately \$1,900,000 has been awarded by the Fund to such research

in its three years of operation, awarding this year alone \$680,000.

Also promoting and encouraging research in the heart field is the Helen Hay Whitney Foundation, which is devoting its entire income to research in rheumatic fever and rheumatic heart disease. The Foundation awarded \$200,000 this year for such research.

Federal Support for Heart Research

Reflecting the growing interest and concern of the government with this major health problem, Congress last year established the National Heart Institute as one of the National Institutes of Health, the research arm of the Public Health Service. In addition to a program of research in its own laboratories, the Heart Institute, through a system of financial grants, is aiding cardiovascular research conducted by medical schools, hospitals, and individual private investigators; awards are also granted for fellowships and traineeships. Determining the policies and allocation of funds by the Institute is the National Advisory Heart Council, composed of outstanding leaders in the medical sciences and in public affairs.

Within a year of its establishment in August, 1948, the Heart Institute had awarded \$2,730,000 in research and fellowship grants. A recent congressional appropriation of \$16,075,000 to the Institute will materially speed needed heart research. The Heart Institute is thus working hand in hand with voluntary agencies and private institutions toward the common goal: the reduction of disability and death caused by heart disease.

Recent Significant Advances

Already significant advances have been made in dealing with the various heart problems. Recent findings have indicated a relationship between congenital heart defects and German measles contracted by the mother during pregnancy. Further investigations in this direction may lead in time to preventive measures—perhaps a vaccine during pregnancy—which will obviate this condition that dooms many children at birth to either an early death or lifelong invalidism. New surgical techniques now make possible the correction of several of the most common and most serious of these congenital malformations.

Intensive studies are under way in medical schools, hospitals, and laboratories

throughout the country seeking the agent or agents responsible for rheumatic fever and its frequent sequel, rheumatic heart disease. A relationship to streptococcal infections has been indicated. The use of sulfonamides or penicillin as a preventive therapy following an initial attack of rheumatic fever has been widely accepted by medical authorities. There is considerable evidence to indicate that this type of therapy aborts subsequent recurrences of rheumatic fever by preventing further streptococcal attacks, thus offering some hope for controlling the extent of heart damage that results from repeated attacks. The solution of this rheumatic fever enigma would lower appreciably the future incidence of heart diseases, as rheumatic heart disease, together with hypertension and coronary arteriosclerosis, is responsible for perhaps 90% of all heart conditions.

Progress in Treatment

An outstanding example of a heart condition formerly hopeless but now definitely coming under the control of medical science is bacterial endocarditis, an infection of the lining of the heart. Formerly fatal in 99% of all cases, this condition can now not only be cured in 70-75% of such cases by the administration of large amounts of penicillin, but can be prevented in many instances by a prophylactic administration of penicillin before and after the extraction of teeth or other operations, especially those about the mouth or throat.

Syphilitic heart disease is another heart condition which medical science today can successfully prevent. Since this condition is usually a late complication of a previous infection, adequate early treatment of this disease and continued public health measures to prevent the spread of syphilis now offer promise of eliminating this form of heart disease.

In hypertension, the most common cause of heart disease in middle age, a number of measures are proving useful in ameliorating the condition, although its origin continues to baffle medical science. Aside from drugs used to relieve temporarily the symptoms of hypertension, a low salt diet has produced varying and in some instances highly successful results in lowering temporarily or for prolonged periods increased blood pressure levels. Surgery, severing nerve channels,

has also proved beneficial in a certain proportion of selected cases so treated.

And finally, even in heart disease associated with aging and degenerative processes—coronary arteriosclerosis, or hardening of the arteries supplying the heart—some progress may be reported. A relationship between this hardening process and excessive quantities of a fatty substance in the blood serum called cholesterol has been indicated. Whether the basis for this lies in a breakdown of the body's fat metabolism or in a dietary maladjustment has yet to be determined, with considerably more research needed for a definitive answer.

Importance of Dicumarol

Of great importance in this field has been the discovery and use of dicumarol as a anti-clotting agent. When administered to those recovering from coronary thrombosis, it has been effective in reducing the incidence of fatal complications which often follow such attacks.

An important development stemming from the investigation of dicumarol has been the inauguration of cooperative studies conducted by several groups who investigate and evaluate simultaneously new developments in research that show excellent promise. By this method, the time spent in painstaking evaluation surveys is pared to a minimum. Dicumarol, for example, as a result of a joint cooperative study of the American Heart Association and 16 hospitals in ten cities, with financial support by the U.S. Public Health Service, was evaluated in 18 months, whereas any one of the participating teams working alone would perhaps have taken ten years to secure the same information.

A major contribution aiding the study and treatment of heart disease has been the differentiation of heart disease into its various types. This progressive step has proved instrumental in directing medical attention to the causes of heart disease, thereby establishing a solid foundation for the proper understanding, study, and prevention of the various conditions affecting the heart.

Pharmacists Important as Educators

Despite the progress made by medical science, the causes of many of the major diseases of the heart and blood vessels have

..... A. Ph. A. Names Officers-Elect

OFFICERS of the AMERICAN PHARMACEUTICAL ASSOCIATION elected to serve during the 1950-51 term are as follows: Henry H. Gregg, practicing pharmacist of Minneapolis, Minn., president-elect; Roy A. Bowers, dean, University of New Mexico College of Pharmacy, Albuquerque, M. Mex., first vice-president-elect; Louis J. Fischl, practicing pharmacist of Oakland, Calif., second vice-president-elect; and members-elect of the Council—B. V. Christensen, dean, College of Pharmacy, Ohio State University, Columbus, Ohio; H. A. B. Dunning, practicing pharmacist and pharmaceutical manufacturer, Baltimore, Md.; and Ernest Little, professor of chemistry and former dean of the New Jersey College of Pharmacy, Rutgers University, Newark, N. J.

Election of A. Ph. A. officials was conducted by a mail ballot which was submitted to all members in good standing. The ballots were counted by a Board of Canvassers appointed by President Jenkins and the results were certified to the Secretary.

The Board of Canvassers consisted of George F. Archambault, chairman, Charles Bliven and L. M. Kantner. Members of the Board were assisted with the tabulation of ballots by George P. Hager, Kenneth E. Hanson, Arnold H. Dodge and Ernest Sinnacher.

The newly elected officers will be installed at the annual A. Ph. A. Convention in Atlantic City, N. J., during the week of April 30, 1950.

Present officers of the AMERICAN PHARMACEUTICAL ASSOCIATION who will continue to function until the Atlantic City Convention in April, 1950, are: Glenn L. Jenkins, dean, School of Pharmacy, Purdue University, Lafayette, Ind., president; Harold C. Kinner, practicing pharmacist of Washington, D. C., first vice-president; Leib L. Riggs, practicing pharmacist of Portland, Oreg., second vice-president. Robert P. Fischelis of Washington, D. C., is secretary and Hugo H. Schaefer, dean, Brooklyn College of Pharmacy, Long Island University, is treasurer of the ASSOCIATION.

PROBLEMS OF HEART DISEASES

(Continued from preceding page)

yet to be discovered. Until these are revealed our immediate progress will depend upon more intensive application of the means we have at hand for dealing with these conditions.

As a force in his community, the pharmacist can lend his influence and assistance in helping to eliminate unnecessary attitudes of fear and fatalism by informing the public of the essential facts already known to medical science. By urging patrons with symptoms to seek competent medical advice, he can be instrumental in guarding individual health. The pharmacist therefore has a vital role to play in helping develop in the public a broad understanding of the facts of heart diseases and the need for early diagnosis.

Though heart diseases are difficult to solve, they are not necessarily fatal. We can still do much with existing medical knowledge, not only to postpone the onset of heart conditions, but also to slow down their

progress. Our ability to do so depends upon our alertness and the vigor of our efforts in meeting this most challenging public health problem.

41 Per Cent of U. S. Hospitals Now Have Pharmacy Departments

Approximately 41% of the hospitals in the United States have pharmacy departments, according to statistics published in the *1949 Directory of the American Hospital Association*. Of the 6,160 hospitals reporting, 2,737 indicated that they have pharmacies. This is a 2% increase over the previous year.

Of the hospitals classified in the *Directory* under the General and Special Short Term category, the number of hospitals with pharmacies is far greater among larger institutions than the smaller ones. Almost all hospitals with more than 250 beds have pharmacies. Pharmacy departments were reported for 76.1% of the hospitals in the 100 to 249 bed size, 31.67% of the hospitals having 50 to 99 beds, and 16.6% of those under 50 beds. In the long-term hospitals, 42.8% were reported as having pharmacies and 86% of the Federal hospitals had pharmacies.



CONFERENCE COMMITTEE ON FOOD, DRUG AND COSMETIC LAW PROBLEMS

MEETS WITH FDA OFFICIALS

PPOINTS of agreement and differences in the interpretation of sections of the Food, Drug, and Cosmetic Act and regulations dealing with prescription compounding and dispensing were the chief topics of discussion in the initial meeting of the Joint Conference Committee on Federal Food, Drug, and Cosmetic Law Problems with Commissioner P. B. Dunbar and other officials of the Food and Drug Administration in Washington, D. C., on August 3.


The Committee, which consists of representatives of the AMERICAN PHARMACEUTICAL ASSOCIATION, the National Association of Retail Druggists, the American College of Apothecaries, the American Society of Hospital Pharmacists and the National Association of Chain Drug Stores, organized at a preliminary meeting of the Committee held the same day by naming Hugo H. Schaefer, representing the A. Ph. A. and Nicholas S. Gesoalde, representing the N. A. R. D., as co-chairmen, with Mr. Gesoalde to act as presiding officer during the first year.

The Committee requested A. Ph. A. Secretary Robert P. Fischelis and George H. Frates of the N. A. R. D. to share the duties of secretary with Dr. Fischelis acting from the ensuing year.

The Joint Committee is the outgrowth of action initiated by both the National Association of Retail Druggists and the AMERICAN PHARMACEUTICAL ASSOCIATION in their respective conventions and in their contacts with the Food and Drug Administration which made it clear that some medium was needed for the interchange of information between the Food and Drug Administration and practicing pharmacists as to the interpretation of the law and regulations.

The hope was expressed on the part of both the government officials and the Associations represented that exchange of views could be arranged prior to the promulgation of interpretations of regulations which vitally affect retail pharmacists and others in their daily practice.

At the afternoon meeting of the Committee with the government official both sides expressed the hope that establishment of a contact of this kind, which is similar to the liaison effected by the pharmaceutical manufacturers through their contact committee, would prove extremely helpful in bringing about better compliance with the laws and regulations and assist in improving


JOINT CONFERENCE COMMITTEE ON FEDERAL FOOD, DRUG, AND COSMETIC LAW PROBLEMS. From left to right (seated): Associate Commissioner Charles W. Crawford; Nicholas Gesoalde; and Dr. Paul B. Dunbar, Commissioner of Food and Drug Administration. (Standing): Mearl D. Pritchard; Herman S. Waller; Hugo H. Schaefer; George H. Frates; Robert P. Fischelis; Assistant Commissioner George T. Larrick; John E. Donaldson; and Dr. Robert T. Storemont, Medical Director, Food and Drug Administration.

the effectiveness of the laws and regulations in protecting the public.

Following a comprehensive discussion of the phases of the law which affect prescription practice, it was agreed to review the opinions expressed at a future meeting. It was the consensus of those taking part in the meeting that the discussions had been very constructive and had served to clarify the points of view of the officials as well as of the representatives of pharmacy.

Whether or not clarification of the regulations or amendment of the law are indicated will be determined when the Committee

confers again with representatives of the Food and Drug Administration.

The personnel of the Committee is as follows: Representing the A. P. H. A., Hugo H. Schaefer; Mearl D. Pritchard, who also represents the American College of Apothecaries; Don E. Francke, who also represents the American Society of Hospital Pharmacists; Robert P. Fischelis, *ex-officio*; representing the N. A. R. D., Nicholas S. Gesoalde; Herman S. Waller, George H. Frates; John W. Dargavel, *ex-officio*; representing the National Association of Chain Drug Stores, John E. Donaldson.

N. A. R. D. Meets September 18-22

Vice-President Alben W. Barkley and Poet Edgar A. Guest are among the featured speakers who will be on the program of the 51st annual convention of the National Association of Retail Druggists in New York City, September 18 to 22.

The pros and cons of President Truman's proposed health program will be discussed by Federal Security Administrator Oscar R. Ewing and Dr. Louis H. Bauer, chairman of the board of trustees of the American Medical Association. J. O. Peckham, executive vice-president of A. C. Nielsen Co. of Chicago, Ill., will report his observations on the British National Health Service.

Speakers who will deliver addresses on topics pertaining to the prescription department or the profession of pharmacy include H. J. Anslinger, U. S. commissioner of narcotics; Frederick D. Lascoff, prominent retail pharmacist of New York City; Dr. H. C. Newton, dean of the Massachusetts College of Pharmacy; Robert A. Hardt, vice-president of Hoffmann-La Roche, Inc.; and Charles F. Lanwer-meyer, chief pharmacist of the Abbott Laboratories.

Extensive consideration will be given to the problems of fair trade. The system of stabilized prices will be discussed in various reports and also in the addresses of Senator Herbert Humphrey of Minnesota and Maurice Mermey, director of the N. A. R. D. Bureau of Education on Fair Trade. Speakers on the related subject of small business include Congressmen Wright Patman of Texas and Charles A. Hulleck of Indiana.

Other features of the convention will be the annual drug show and various entertainment sponsored by several manufacturers in the drug and related fields.

New Source of Cortisone

Because certain plants of the *Strophanthus* variety are believed to offer a source of supply for cortisone (Compound E), an African expedition jointly sponsored by the U. S. Public Health Service and the Department of Agriculture has been dispatched to obtain specimens of various plants which grow in equatorial Africa, Malaya, Liberia and certain areas of eastern China.

It is believed that the plants contain steroid compounds from which cortisone may be more easily synthesized than from ox bile which is the present source. Cortisone, as previously reported, is an adrenal cortical steroid whose value has recently been established in controlling the symptoms of rheumatoid arthritis.

Chemical Industries Exposition

The 22nd Exposition of Chemical Industries will be held in Grand Central Palace, New York City, November 28 to December 3. Featured at the exposition will be exhibits of chemical and pharmaceutical manufacturers who will display new equipment and products, and demonstrate new methods of processing.

American Standards Association

The 31st annual meeting of the American Standards Association will be held at the Waldorf-Astoria Hotel, New York City, October 11 through 14. An address by Karl T. Compton, president, Massachusetts Institute of Technology, and chairman, Research and Development Board of the National Military Establishment, will climax the four-day series of conferences.

John Uri Lloyd

- PHARMACIST
- PHILOSOPHER
- AUTHOR
- MAN



*by Roy Bird Cook**

It seems well to point out at the outset that this series of rambling comments has no semblance to a study of the life of this most versatile man; a man whose memory is honored and respected not only in the field of pharmacy but in spheres of our cultural and social life far removed from the research of drugs. If this paper bears the mark of the land of the tristate—Ohio, Kentucky and West Virginia, and of the great valley of the Ohio River—my reader need not be surprised, for it represents a glimpse into this heart of America, where John Uri Lloyd and his family lived—a land where he spent his life and out of which flowed the results of his labors so that all mankind might be touched with the results and achievements of a most unusual life. It began almost a century ago to the day that we are meeting here in Jacksonville, and it reaches down and touches the youth of the writer, floundering around in the pharmacies and pharmaceutical practice through the

latter “gay 90’s” at the opening of the present century.

In 1899 a schoolboy took up his work in a typical pharmacy of that day in West Virginia in a land that had its western borders bathed by the waters of the Ohio River. To the north the smoke of industry was surging upward amid the growing pains of Pittsburgh. To the west along the Ohio River stood, and still stands, the sprawling “Queen City of the West,” the city of Cincinnati. Across the river were the low hills of Kentucky, and the two cities of Newport and Covington. Along the north shore, clinging to the hills, was the city bearing the name of a great Roman, and back of it rose the hills of Ohio. In this region and on these hills dwelled the Lloyds and their kin, whose influence was to reach out in all directions like a great, many-pointed star. The old family seat was not far from the present greater Cincinnati Airport and one of the farm estates has been set aside for the use of the public as a park and to preserve native plants and trees.

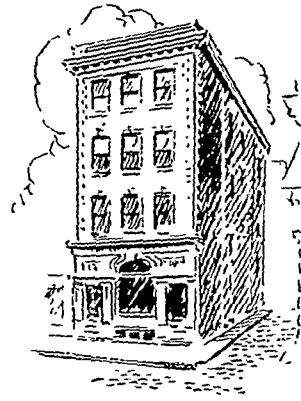
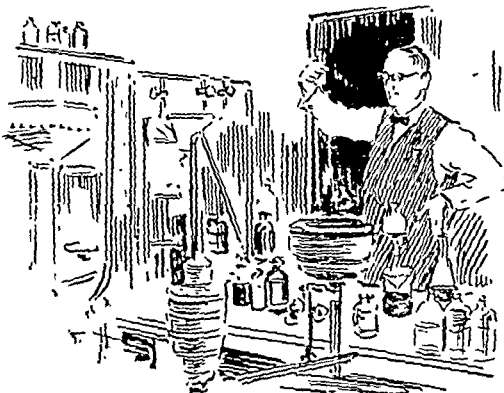
Looking toward both Pittsburgh and Cincinnati was the town of Weston, West

* Retail Pharmacist, Charleston, W. Va.; Secretary, West Virginia Board of Pharmacy; and Past-President, AMERICAN PHARMACEUTICAL ASSOCIATION. Presented before the Section on Historical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, Jacksonville, Fla., April, 1919.

Virginia. Located here were three drug-stores. They in turn were perfect counterparts of all others in this region. Over or along the top of each prescription case in these stores was a long row of small, four-ounce bottles, whose titles began with the first letter of the alphabet and reached almost to the letter "Z." Closer inspection showed they were Lloyd's Specifics. Day after day over the counters of these stores went prescriptions written by men, who were loved by all, wondered about by other schools of medicine, and were called "eclectic physicians." We never knew any who were not successful, and today, one hundred years after the birth of Dr. Lloyd and the fruition of this school of medicine, two of these men, Dr. George Snyder, of Weston, and Dr. Thomas H. Miller, of Fairmont, are still high in the esteem of all as practicing physicians in this region. Here and there all through this "Lloydland" may be found others, for it is said that over 5000 are still practicing in the United States. It is not strange that the young pharmacist of that day wondered about the who and the why of the medical field, eclectic, homeopathic, alopathic, each with his meed of honor and praise.

Then, too, in almost every store on the desk of the pharmacist-owner was a copy of one or two books, one *Etidorhpa*, which your employer told you was Aphrodite spelled backwards, and the other *Stringtown on the Pike*. The dialect and the understanding of boys portrayed in these two books fascinated the youth of that day as well as his elders. All were from the pen of the man who made the Specifics noted above! And was there a "Stringtown?"

Dr. Lloyd, the pharmacist



Lloyd Library, Cincinnati, Ohio

Indeed there was, for it was none other than the little village of Florence, in Boone County, on the Lexington Turnpike, some 12 miles from the Ohio River, at Covington, which still hugs the low hill divide between the Licking and Kentucky Rivers. The county itself was named for the noted pioneer of western Virginia and Kentucky.

In the library of the writer is a copy of the "Stringtown" book, on the front page of which appears these words: "Captain Robley D. Evans, with the Compliments of his friend, John Uri Lloyd, Cincinnati, Feb. 1, 1901." What pharmacist whose memory goes back into Spanish American War days does not remember "Fighting Bob" who commanded the Oregon in the days of '98, and who later was transferred to the Iowa? Many of these same "old pharmacists," who took in the A. Ph. A. meeting in Portland, Oregon, visited this old battleship then sleeping its life away in the Willamette River. What a true record Dr. Lloyd set down in those few brief words, "his friend." He was indeed a friend to all men who knew him. It is further recorded that Dr. Lloyd, Ex-President Cleveland and Evans were great friends and often went on trips together.

The pharmacist of that day who read "Sp. Nux Vomica, gtts. XL, Sp. Rhus Tox. gtts. XX; Alkaline Elixer, oz. II and Aqua. Dist. q.s. 4 oz.," never once stopped to worry about the why, the wherefore and the results. And who can forget the famous Compound Lobelia Powder! For results there were and that was proof enough. Little did they then know that beneath all

Seek Data on John Uri Lloyd

Anyone recalling interesting anecdotes concerning John Uri Lloyd is urged to write Mrs. Corinne Miller Simons, Lloyd Library and Museum, 309 W. Court St., Cincinnati 2, Ohio. All letters will be acknowledged. Mrs. Simons is collecting data for a forthcoming biography of John Uri Lloyd.

this was work, study and results which would, by 1949, be proved beyond all doubt in our field.

There is not the slightest doubt that Lloyd was one of the most versatile men of our age. Those who knew him by the power of the written word as a novelist bear ample testimony to this. Those who knew him by his work in our field can likewise confirm the same conclusion. A continual flow of scientific writings leaves no doubt that he made a number of original discoveries in physical chemistry that were never published. Many of these ideas he used constantly in his pharmaceutical productive work. Others, sometimes through some quirk of circumstances, often got the credit because of some independent discovery or publication.

Unusual Knowledge of Engineering

John Uri Lloyd also had an unusual knowledge of the principles of engineering. This, like his chemical work, has seldom been equalled or excelled. Indeed he was one of the few self-trained, advanced thinkers of our age. And it would not be out of place to point out here that the great publication of the A. Ph. A., the National Formulary, was prompted by his study of the botanicals and the publication of his work on the "Elixirs."

In the personal field, there are few of his students who were not left with a life-long impression of this firm, kindly man, who was the friend of every youth. One former student recently recalled his love for the birds and the animals, his love of pets, even a stray kitten that might wander into the classroom. One distinguished physician recalls that not once in a chemistry class did he use a notebook or any book for reference. As Elbert Hubbard once wrote, "He just said it." His very mind was a book. But

even then (1891-1893) he was collecting from the ends of the earth every published work in his field that could be located. The results we all know. Many of his students are still engaged in purveying to the sick and all alike testify to the love and respect which they held for him as a teacher.

Contact with W. Va. Pharmacists

His contact with the West Virginia field of medicine and pharmacy were not restricted to the field of teaching. His influence was felt in the 1880's when Edmund Bocking, the distinguished first secretary of the board of pharmacy, A. N. Williams, one-time secretary of the same board, and others were working in the field of the A. Ph. A. Dr. Lloyd then and there extended his influence with others than students. An early state association in West Virginia came and went. Lloyd's close friend, Dr. J. H. Beal, from the same Ohio, crossed the river in 1906 and a new West Virginia organization took on life.

To the capital city of Charleston in June, 1908, journeyed Dr. Lloyd. Here two rather unusual sessions took place; one in the "old" capitol building of the State which was burned January 3, 1921, where two hundred pharmacists and supporters turned out. Then came the all-day session on the steamer "John Q. Dickinson" which made a trip up the placid Kanawha River to the town of Montgomery. The steamer stopped at the Marmet Lock after a fine journey on a fine day. Inside the boat the group gathered to hear of pharmacy and medicine from the lips of this unusual man and teacher. Some of his students in pharmacy or medicine were there. Bruce Dawson was the president of the association and the secretary was none other than one of Lloyd's own former students, Arch Krieg. Out on the deck the crowd went later, and in the bow stood Dr. Lloyd. He was thrilled with the looks of the lovely river which came tumbling down from mountains of North Carolina, many miles away, really far up in the sky, some 3300 feet to be exact. His mind must have gone back to Kentucky for the hills along the meadows became to him a land of "knobs." This "knob" and that "knob" kept him entranced, and he made them likewise to this gathering of friends. It is recalled how he held his thumb and forefinger together, forming a triangle. Then

pointing to the audience he addressed them with a frequent exclamation, "You young people listen, listen to me," even though the audience was made up of people some of whom were as old as he. Others recall his, "Young people, now listen to me, all that I am or all I ever expect to be, I owe to my mother." Little did he then know that on the shore of this river, in sight of where he spoke, would rise the great stacks of modern chemical plants not unlike the pipes of a great organ. Here the field of synthetic chemistry in which he was so interested would reach out over all the earth. But such has come to pass. At noon the party held forth at the New Montgomery Hotel. In the evening Dr. Lloyd was entertained at the noted Ruffner Hotel, in Charleston.

Attended West Virginia Meeting

Dr. Lloyd next attended the West Virginia Association meeting at White Sulphur Springs, July 9 to 10, 1913. Walter C. Price, the president, and C. A. Neptune, secretary, both were well known to the distinguished visitor. To this meeting he brought an illustrated lecture which delighted a large crowd for nearly two hours. The philosopher-teacher, in his own way, followed the illustrations with a fascinating, unprepared talk.

Those sessions were held in the famous old White Sulphur Springs Hotel, a large frame structure, predecessor of the famed Greenbrier Hotel of 1949. It was surrounded by a series of long outside steps where once again the crowd gathered in the sunshine to hear Dr. Lloyd, the archeologist. With his engaging manner he took the group on a trip to the Southwest, showing his deep knowledge of the lives of people now long since gone. He even gave some side remarks on certain Masonic mosaics which he felt might tie in the people of Central America with those of ancient Egypt. An interesting side note is that just before, in 1911, Wallace Procter, son of the famous William Procter, Jr., father of American Pharmacy, had died in Wheeling, West Virginia. The year following was marked by the appearance of the famous Joseph P. Remington. And Dr. J. H. Beal was "one of us," as it were. It was a time of contacts with the great in pharmacy for the druggists of West Virginia!



Dr. Lloyd, the author

Here we leave some of the local touches with our subject and turn to the more generally recorded facts of his life. It may be well to mention that a forthcoming biography will carry a merited study in full detail of his career.

John Uri Lloyd was born in North Bloomfield, New York, April 19, 1849, a son of Nelson Marvin and Sophia Webster Lloyd. The family, we are told, came from New England. The date of his birth, falling as it did on the anniversary of the Battle of Lexington and Concord, occurred just a few weeks after Gen. Zachary Taylor, of Mexican War fame, became President of the United States.

Lloyd Family Moves West

In 1853, the Lloyd family joined the movement of people of that day to the west of the Alleghenies and down the Ohio River. At first the family lived in several locations in Kentucky, notably at Florence, Burlington and Petersburg. The parents were interested in education and both became teachers in the local schools. His father, an engineer, was at one time connected with a proposed railroad to be built between Covington and Louisville. His mother, a poetess of no mean note, to a large degree seems to have influenced her children to become interested in people, in nature, indeed in all aspects of the life of that day.

In 1851, a brother, Ashley Lloyd, was born, who was destined to become the busi-

ness leader of the unusual family. This brother died in 1926. When John Uri was ten years old, and already making observations on the Kentucky "turnpikes," another little brother was born. He carried the name of Curtis Gates Lloyd and he also died in 1926.

If we believe in heredity there must have been some scientific strain of decided bearing in this family for the younger brother also became a pharmacist, and then to make life more interesting became one of the world's greatest mycologists. His collection through the years of fungus specimens contributed extensively to the knowledge of medicinal plants and their history and has made Cincinnati a center in this field of science. Under the title of *Drugs and Medicines of North America*, the two brothers, in 1884-1887, published a series of monographs which were later reprinted. This great team of brothers in time founded the famous Lloyd Library, one of the outstanding research libraries in the world, containing, as it does, over one hundred and ten thousand volumes of books and some ninety thousand pamphlets.

Returning now to John Uri we find him at the age of 12 observing with a boy's natural interest the departure from Kentucky of troops in the opening days of the Civil War. Some regiments marched into southern West Virginia and others entrained for the opening of operations under McClellan, along the Baltimore and Ohio Railroad in northern West Virginia. In this group was the famous German regiment from Cincinnati, among whose members were many people Lloyd was to know as he grew to manhood. He recorded that he saw Abraham Lincoln, and heard him speak at the old Burnet House when on his way to Washington! We can well imagine that the talk in the old store at "Stringtown on the Pike" was full of the talk of war. So it remained until the spring of 1865 when his older neighbors, those who survived, came home, some in uniforms of dusty Gray and others with faded Blue.

Chemistry Appealed to Him

Chemistry held a great appeal for this unusual boy and pharmacy fitted in with that field of interest. We find him apprenticed to W. J. M. Gordon, in Cincinnati, in 1863 and from here he went to the George Eger Pharmacy. In this period

through the inspiration of Dr. John King he became interested not only in pharmacy but also in that particular school of medicine which emanated from the regions of Cincinnati.

Interest in Eclectic Medicine

It may be proper here to devote a bit of attention to the rise of "botanical" medicine and pharmacy, or the eclectic school of thought. In 1817, C. S. Rafinesque, a man of many talents, assumed the chair of botany of Transylvania University located in Lexington, Kentucky. John E. Cooke, M.D., and many other names, famous in the field of medicine, were connected with this school. In 1830 Rafinesque published a *Manual of Medical Botany* which many regard as the first handbook in the country to meet the needs of intelligent physicians. Here it is affirmed that "pharmacy by the aid of botany and chemistry has become a science."

Later, in 1852, appeared the *Eclectic Dispensatory of the United States*. This came in time to be *King's American Dispensatory*. The whole field revolved around the work of John King, Robert S. Newton, Dr. John Scudder and others. Without going into details it may be said that Dr. Lloyd, in the years to follow, devoted the greatest part of his life to pharmaceutical work in the field of eclectic medicine. By the time the 15th edition of the basic book of that system came from the press, he became one of the editors.

In addition to his work in the drugstores, always with an unsatisfied ambition for knowledge, he attended the chemistry class of Dr. Robert Bartholow, of the Ohio Medical College. Later he delved into the mysteries of anatomy at the Miami Medical College under Dr. Clendenin. Then his talents turned to employment with one of the older early pharmaceutical makers, operating under the name of H. M. Merrell Company, at Court and Plum Streets, Cincinnati. In 1876 he acquired an interest in this firm and it became Merrell, Thorp and Lloyd, changed in 1881 to Thorp and Lloyd Brothers and in 1885 to Lloyd Brothers. His associates were his brother N. Ashley Lloyd and Curtis Gates Lloyd, the youngest brother. It is by this name that the firm is best known to us. In 1924 due to advancing age of the owners it became Lloyd Brothers Pharmacists, Inc. In 1938 it was

sold to S. B. Penick Company of New York City. This firm for many years produced the famous Lloyd's Specific Medicines (and still does in limited amounts), specializing in drugs of botanical origin. As is well known the Eclectic School to a large degree passed up drugs of mineral origin. Under the management of John Uri Lloyd the company assumed not only a leading position in the field mentioned, but it also assumed a place of leadership in pioneer plant chemistry, colloidal chemistry and new pharmaceutical methods.

A Man of Many Talents

But Dr. Lloyd's talents were by no means restricted to the office of a manufacturing plant. As early as 1881 his *Chemistry of Medicines* appeared. To follow the list of professional publications from his pen, or jointly with that of his brother Curtis, would make a voluminous index. John Uri alone wrote eight scientific treatises and more than 5000 articles and scientific papers. From 1883 to 1887 he was professor of pharmacy at the Cincinnati College of Pharmacy, which has a history reaching back to 1852, when the A. PH. A. was first getting started. In 1878 he became professor of chemistry and later president of the Eclectic Medical Institute, retiring from that post in 1904. He served as editor of the *Pharmaceutical Review*, the *Eclectic Medical Journal* and the *Eclectic Medical Gleaner*, yet found time to explore many avenues of plant chemistry and produce contributions to medical literature numbering into the hundreds. During this period (1887-1888) he served as President of the AMERICAN PHARMACEUTICAL ASSOCIATION. As a result of his labors, some five educational institutions conferred degrees ranging from M.D. to LL.D. upon him. He was honored three times with the Ebert prize and in 1920 the Remington Honor Medal was awarded him for his research in colloidal chemistry.

One feels a sense of inability to understand how one man could do so much in one lifetime; however, this record gives but a glimpse of that man and his activities. He also lived in another world in which he is equally highly regarded, that of American literature. The little boy who grew up along the roads of old Kentucky recorded in his mind and heart the love of the common

people; the folklore and stories of his people. He made a careful study of the semi-hill dialect and then set it down in six widely read novels. Indeed he may be said to be the outstanding novelist to come out of the American pharmaceutical scene. In *Eti-dorhpa* or the *End of the Earth*, which appeared in 1895, he combines a knowledge of drugs and actions with a strange story of the experiences of a man in another world. This publication achieved wide acclaim, not only in the field of his own profession, but in all the literary world. By 1936 this work had gone through 18 editions.

The Right Side of the Car (1897) is a story of a sentimental journey. To the present writer *Stringtown on the Pike*, which appeared in 1900, presents the greatest appeal for here Dr. Lloyd is at his best. He knew the folklore and legends of his home region and, not unlike Washington Irving in his *Legends of Sleepy Hollow*, he knew how to tell them. Most of all he knew the village life, the old school, the country store. He knew why covered bridges were haunted and why a boy loved to feel the dust of a Kentucky road as it "squezzed up between" barefoot toes. He knew the feel of the warm, summer night on a boy's cheek as he passed by the old "graveyard." Best of all, he knew life. In 1910 he wrote *Warwick of the Knobs* and in 1903 *Red Head*; both displayed a fine understanding of the much-misunderstood feudal past of the hills of Kentucky. *Scroggins*, a story of an early and not soon forgotten love, came along in 1904.

Stringtown on the Pike

Then came *Felix Moses* (1930) the beloved Jew of *Stringtown on the Pike*, the life experiences of a unique character, a Jewish peddler who fought in the Confederate States Army. Lastly came *Our Willie* (1934), a sequel to *Stringtown on the Pike*. Few men have lived who possessed such versatility and fewer still have achieved such distinction in all their fields of endeavor.

As already pointed out Dr. Lloyd was a wide traveler. In addition to his American interests he had applied his talents to scientific work in Germany. In 1935 he made a trip to Japan.

He married Adeline Meader, December 27, 1876, who died on their honeymoon, January 1, 1877. On June 10, 1880, he married Emma

Rouse, of Crittenden, Ky. She lived until November 28, 1932. Three children were born to this union: John Thomas, born April 30, 1884, who later achieved fame as an entomologist and pharmaceutical manufacturer, and became President of John T. Lloyd Laboratories, Cincinnati; Annie, born November 18, 1886, married Dr. O. C. Welbourn, now resides in Encina, California; Dorothy, born October 28, 1896, married James A. Brett, Jr., of Cincinnati.

Dr. Lloyd died on April 9, 1936, at the home of his daughter, Mrs. Welbourn, at Van Nuys, California. The funeral services were held in Calvary Episcopal Church, Cincinnati, and he was laid to rest in the Hopeful Cemetery, at Florence, Kentucky,

in the heart of the land where he had spent his youth and which he had made famous in his book, *Stringtown on the Pike*.

Thus comes to an end a very incomplete sketch of one of America's most noted pharmacists. The influence of his work will live so long as men continue to search for the secrets of the world of plants. His first chemical still reposes in the Smithsonian Institution at Washington, D. C. His studies and writings are being referred to and quoted by authors as of this minute (see Gordon's *Aesculapius Comes to the Colonies* [1949]). And more and more the chemists who pore over their test tubes and microscopes find that John Uri Lloyd sought for the truth and found it.

Vitamin B₁₂ Admitted to U. S. P. XIII

CRYSTALLINE vitamin B₁₂, crystalline vitamin B₁₂ injection, and vitamin B₁₂ concentrate are being admitted to the U. S. P. XIII by Interim Revision, Dr. E. Fullerton Cook, chairman, U. S. P. Revision Committee, has announced.

The following statement (reprinted in part) and recommendation by the U. S. P. Anti-Anemia Advisory Board in reference to claims for the vitamin B₁₂ activity of liver and other anti-anemia preparations have been released for the attention of physicians, pharmacists, and manufacturers of products intended for the treatment of pernicious anemia:

"It is of great importance that patients suffering from anemia and the physicians responsible for their lives should have conclusive proof not only that claims for the vitamin B₁₂ content of preparations of liver, stomach, or other substances are based upon sound and scientific evidence but especially that they are genuinely translatable into clinical activity. Thus at present, as for many years past, the potency of all acceptable preparations of liver and stomach has been expressed only on the basis of clinical trial in terms of the familiar U. S. P. units."

A collaborative study for estimating the vitamin B₁₂ contents in liver injection or other products intended for the treatment of pernicious anemia, now under way under the Board's supervision, has the support of the A. M. A. Council on Pharmacy and Chemistry, the Food and Drug Administration, the Canadian Department of National Health and Welfare at Ottawa, the National Institute of Medical Research at London, many other scientific investigators in this country and abroad, and numerous manufacturing laboratories. "Those now working on the

liver versus vitamin B₁₂ relationship will be invited to participate in this study. A crystalline vitamin B₁₂ and samples of liver injection of known potency, in several dilutions, will be supplied by the Board. All assay reports will be made under code.

"In the meanwhile, until the results of this study can be evaluated and a reliable method for assaying a clinically active vitamin B₁₂ has been established, the U. S. P. Anti-Anemia Advisory Board has prepared and is sending to the medical and pharmaceutical press the following recommendation which has been signed by all members of the Board, Dr. Frank H. Bethell, Dr. William B. Castle, Dr. Robert W. Heinle, Dr. Irving M. London, Dr. William T. Salter, and Dr. Maxwell M. Wintrobe:

Recommendation on Claims for Vitamin B₁₂

"Although progress is being made toward the attainment of a reliable microbiological assay for the vitamin B₁₂ content of commercial anti-anemia preparations, general agreement on a standardized procedure for such assays has not yet been reached. Consequently, with the exception of preparations of crystalline vitamin B₁₂, it is considered to be contrary to the best interests of patients and of the medical and pharmaceutical professions for the result of unofficial assay procedures for vitamin B₁₂ to be stated on the labels of the U. S. P. anti-anemia preparations. Thus, until such time as the relation between vitamin B₁₂ content or some other measurable component and the clinical and hematopoietic activity of U. S. P. anti-anemia preparations has been established, only the present U. S. P. unitage with which the medical profession is familiar should be employed. It is hoped that eventually a suitable microbiological assay procedure may entirely replace the present U. S. P. units which are based on clinical evaluation of anti-anemia potency."

New Faculty Assignments and Deanships

RECENT announcements from various colleges and universities indicate a number of changes in faculty assignments and deanships. Those changes which have been reported to the AMERICAN PHARMACEUTICAL ASSOCIATION during recent weeks are listed in the following items:

University of Maryland

Dr. Noel E. Foss, formerly assistant dean of the University of Illinois College of Pharmacy, has been appointed dean of the University of Maryland School of Pharmacy, succeeding the late Dr. Andrew G. DuMez. The new dean is a native of South Dakota and has taught at Duquesne University. He received his postgraduate training at the University of Maryland and has had extensive experience in manufacturing pharmacy. During World War II he served as a major in the Medical Administrative Corps, holding a responsible position at the St. Louis Medical Supply Depot.

University of Pittsburgh

Dr. Stephen Wilson, chairman of the A. PH. A. Committee on Social and Economic Relations, has been named vice-dean of the School of Pharmacy at the University of Pittsburgh. Dr. Wilson is professor of pharmacy at the University and is one of the few teachers in this field who has specialized in economics. He is past chairman of the Section on Pharmaceutical Economics of the A. PH. A. and has also been active as a member of the Curriculum Committee of the American Association of Colleges of Pharmacy.

University of Illinois

Dr. Frank T. Maher has been appointed assistant dean of the University of Illinois College of Pharmacy. Dr. Maher currently holds the rank of professor of pharmacognosy and pharmacology and head of the department in the College of Pharmacy. He will continue to serve in that capacity. Dr. Maher has been a member of the faculty of the University of Illinois since 1937 when he was appointed as assistant in the department of pharmacy. He was a research associate at the Mayo Clinic in Rochester, Minn., during 1947-1948.

University of Wisconsin

Dr. Melvin W. Green has been named associate professor of pharmaceutical chemistry at the University of Wisconsin's School of Pharmacy at Madison. Dr. Green comes to Wisconsin from the Laboratory of the A. PH. A., where he recently served as director and previously as chief chemist.

Prior to this he was instructor of pharmacology at Georgetown University College of Medicine, Washington, D. C., assistant professor of pharmaceutical chemistry at the Cincinnati College of Pharmacy, and research assistant at the Mellon Institute of Industrial Research, Pittsburgh, Pa.

University of Connecticut

Dr. Arthur E. Schwarting has been appointed associate professor of pharmacognosy at the University of Connecticut College of Pharmacy. Dr. Schwarting has been associated with the University of Nebraska since 1943 where he held the position of chairman of the department of pharmacognosy. In his new position he will direct the research and graduate program in the fields of pharmacognosy and botany. Dr. Schwarting has been active in the American Association of Colleges of Pharmacy, the American Association for the Advancement of Science, and the AMERICAN PHARMACEUTICAL ASSOCIATION.

Drake University

Dr. Byrl E. Benton of Chicago has been appointed dean of the Drake University College of Pharmacy at Des Moines, Iowa. Dr. Benton has been serving as associate professor of manufacturing pharmacy at the University of Illinois College of Pharmacy since September, 1947. He also was in charge of hospital pharmacies at the University of Illinois Research and Educational Hospitals and the Illinois Eye and Ear Infirmary.

College of the Ozarks

Dr. Kenneth Redman has assumed his duties as dean of the School of Pharmacy at the College of the Ozarks, Clarkesville, Ark. Dr. Redman comes to Ozarks from the University of Georgia. He previously taught at the University of Toledo, the North Dakota Agricultural College, the University of Mississippi and the University of Georgia. Dr. Redman is chairman of the A. PH. A. Section on Historical Pharmacy.

University of Georgia

Appointment of Dr. Joseph P. LaRocca as associate professor of pharmacy at the School of Pharmacy, University of Georgia, was recently announced. A native of Pueblo, Colo., Dr. LaRocca has taught at the University of Maryland and the U. S. Army University Center at Florence, Italy. For the past two years Dr. LaRocca has been with the Naval Research Laboratory, Washington, D. C.

(Continued on Page 575)

Pharmacy

in

Finland

by **Bernard Aabel***



Pharmacy is housed in modern Finnish building

PHARMACY is practiced on a very high professional plane in Finland. To obtain a license to practice, the Finnish pharmacist must receive from five to six years of university training and, in addition, have four years of practical work. Even then, the Finnish pharmacist, as a rule, cannot operate his own establishment immediately.

Finnish pharmacies are all privately owned but regulated by the Government. When an owner dies, the Government grants a license to the senior eligible pharmacist who has the money and desire to buy the pharmacy.

There are 448 pharmacies in Finland, 33 of which are located in Helsinki. With a population of nearly four million people, Finland has a pharmacy for every 8000 persons.

Finnish pharmacists are highly respected in the community and looked upon as members of a most important health profession.

Another interesting sidelight is the fact that 50 per cent of the pharmacists in Fin-

land are women and 25 per cent of the pharmacies in that country are owned by women. This is not too surprising since Finland claims it is the first country to give universal suffrage to women.

Although there are no minimum prices, the Government sets maximum prices on all medicines. Thirty to 40 per cent of the business volume is from prescriptions. Fifty-five per cent of the prescriptions are made up by the pharmacist, and the balance comprises various specialties.

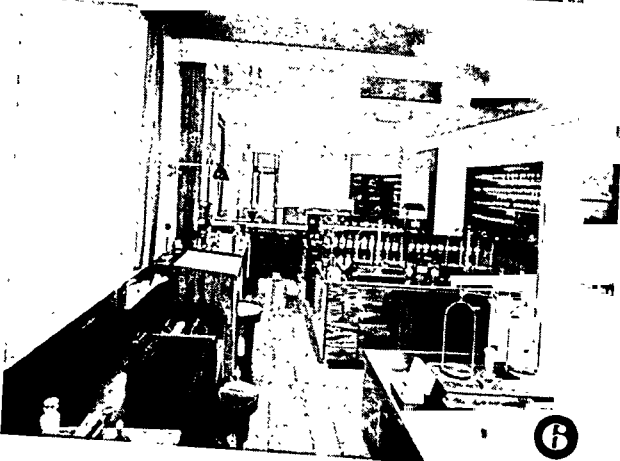
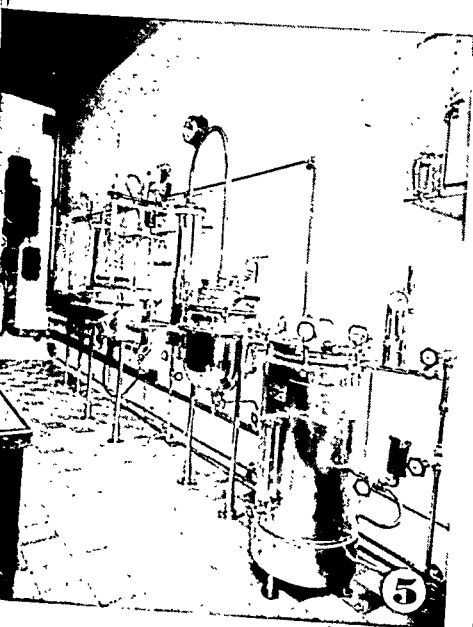
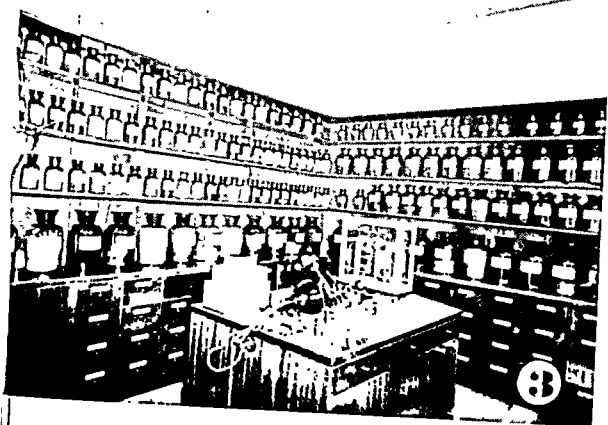
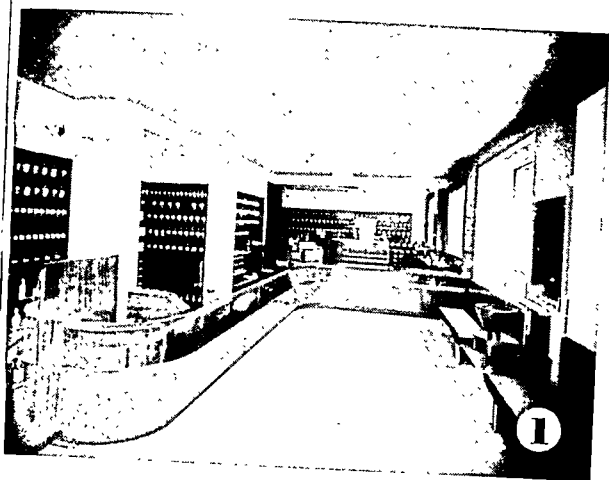
Almost all the raw materials for pharmaceuticals are imported, and because of the lack of foreign exchange, there is only a two- to three-month supply on hand. However, all the latest drugs and biologicals are in stock, including penicillin.

Finnish hospitals are among the most modern and efficient in the world. The

Pictures of Finnish Pharmacy

Pictures of one of Finland's modern pharmacies, published with this article, were supplied by the author. Note the up-to-date fixtures, equipment and apparatus, the well-stocked shelves and totally professional appearance.

* Lt. Col. Bernard Aabel, Medical Service Corps, U. S. A., and formerly liaison officer of the Surgeon General to the F. Ph. A. Committee on War Activities, is attached to the American Legation at Helsinki, Finland. In a communication to A. Ph. A. Secretary Robert P. Fischelis, Lt. Col. Aabel gave his observations on the practice of pharmacy in Finland from which the foregoing comments are taken.



1. Interior of pharmacy. 2. Prescription stock. 3. Another view of prescription laboratory. 4. A view of the pharmacist-owner's office. 5. Laboratory equipment used by the pharmacy. 6. Dispensing and compounding laboratory.

Finnish Government hopes in the future to set up research laboratories for pharmacology, biology, and chemistry in addition to sponsoring foreign study trips.

However, with huge funds being expended to resettle 500,000 refugees from Carelia (one of the territories ceded to Russia), reconstructing the towns, bridges, and highways ravaged by the retreating Germans in Northern Finland and Lapland, paying \$300,000,000 to Russia in reparations by 1952, and otherwise adjusting the economy after almost continuous war from 1939-1944, Finland already is involved in a Gargantuan undertaking. However, since three-fourths of the reparations have now been delivered, the little country faces a brighter future.

Inflation is rampant here as everywhere, and life is fraught with deficiencies, but the hard work and perseverance of the Finns will bring them back. The caloric intake is back to 95 per cent of normal, but even at that the Finns are much better fed than most European peoples. The greatest deficiency in consumer goods is clothing, but it is expected that relief will come sometime next year.

Finland with its four million people is the sixth largest country in Europe, and is covered throughout with continuous pine forests and 60,000 lakes. It is this "green gold" of the forests that is making it possible for Finland to make its remarkable comeback. It is amazing to see what improvisation can be made out of paper. In Finland the hotels are using paper sheets (they rustle like a forest of oak leaves in a hurricane), paper rugs (good-looking designs that last five to six years), string, and even schnapps made from wood.

Finns Keep Democratic Principles

These people become more determined every day to retain their democratic principles. The Communists lost heavily in the national elections last year, and are not now participating in the Cabinet at all. They were offered minor posts in a coalition government, but refused to participate without getting the portfolio of Ministry of Interior (which included the State Police). The Social Democrats established a Government without rightists and leftists

Augustus C. Taylor Honored



In the presence of a large number of representatives of various pharmaceutical associations, the Commissioners of the District of Columbia, on August 25, presented an Award of Merit to Augustus C. Taylor in recognition of his 45 years of continuous service with the D. C. Board of Pharmacy.

Dr. Taylor, 80-year-old president and charter member of the D. C. Board, relinquished membership on the Board on July 1.

A life member and former honorary president of the AMERICAN PHARMACEUTICAL ASSOCIATION, Dr. Taylor declined reappointment on the D. C. Board because of his advanced age.

One of the original delegates to the National Drug Trade Conference, Dr. Taylor served as vice-chairman of that group for several years.

Dr. Taylor helped draft the Pure Food and Drug and the Harrison Anti-Narcotic Acts. He also assisted in writing the District's pharmaceutical law, and has edited numerous publications in the field of pharmacy.

He began his pharmacy career by working summers in the apothecary shop of his great-grandfather, Dr. Jere Carrier, a surgeon mate in the American Army during the War of 1812.

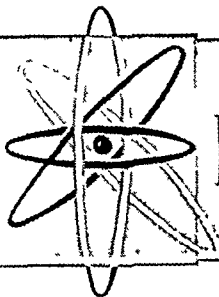
Dr. Taylor, a native of Detroit, has made the Nation's capital his home since 1878. He retired in 1925 after operating his own pharmacies in the District for several years. However, for the past 20 years he has been a consultant to Peoples Drug Stores, and will continue in this capacity.



in a determined effort not to allow Finland to become another Czechoslovakia.

During the past year the Communists have made every effort to start nation-wide strikes, as they have in France, to create chaos and unrest, unseat the Government, and embarrass it in the eyes of the Soviet Union. However, these efforts have all failed. It looks as if only force from the outside will ever deprive this country of its democracy.

The popular notion in many countries that Finland is behind the iron curtain is certainly untrue. It is intensely interesting to watch the heroic struggle being put up by these people to make democracy work.



ELECTRICAL SIGNALS from the brain and heart can now be used to give warning when an anesthetized patient is in danger. Signs of approaching death are given two minutes earlier by a brain wave machine than by the breathing and pulse rates usually observed, a Mayo Clinic team reported to the recent meeting of the American Medical Association.

BOVINE TUBERCULOSIS infection has been reduced to less than one-half of 1% in every county in the United States, according to the Bureau of Animal Industry. The Bureau still is trying to produce a better tuberculin to aid in solving the problem of non-visible-lesion reactors.

POISON IVY poisoning is responsible for more than \$8,000,000 being spent annually in the United States for treatment, according to *Modern Medicine Topics* (June, 1949). Although the annual total number of cases is not known, ivy poisoning results in more than 465,000 medical calls each year and about 90,000 hospitalizations, the publication states.

CURARE is bringing relief to persons suffering from rheumatoid spondylitis. Use of the preparation, *d*-tubocurarine suspended in oil and wax, has been reported by Dr. Bernard M. Norcross of the University of Buffalo Medical School (*J. Am. Med. Assoc.*, 140: 397, 1949).

SHIPMENTS of radioactive and stable isotopes have totaled 8363 during the three years of existence of the Isotopes Division of the Atomic Energy Commission. Also, to date over 1850 scientific and technical publications describing isotope studies have been issued, with approximately 200 papers being published each month.

TWO CASES of bubonic plague reported in New Mexico are the first cases of the once-dread disease in this country since 1947, records of the U. S. Public Health Service show.

LUPULON is the name of a new antibiotic having tuberculosis-fighting qualities in mice. Derived from hops, its anti-TB action has been reported by Drs. Yin-Ch'an Chin and Hamilton H. Anderson of the University of California Medical School. Whether the antibiotic can reverse the symptoms of the disease has not been determined yet.

THE IBEX, heavy-horned wild goat of the Alps, is being re-established in the mountains of Germany

and Austria, where it was exterminated by overhunting many years ago. Medico-magical superstitions were partly responsible for the beast's extermination since, even in early modern times, strange powers have been accorded to "bezoar stones," hardened hair-balls sometimes found in the animals' stomachs.

TOXIC GOITER, for which surgery, x-ray therapy or antithyroid drug therapy is unsuitable, can be successfully treated with radioactive iodine, four Los Angeles researchers have reported. (*J. Am. Med. Assoc.*, 140: 1082, 1949.) Sixteen out of 18 cases of the disease were successfully managed by administration of the chemical.

FLORIDA, long engaged in a battle of superlatives with California, now must defend a fishing claim against scientific opinion. Dr. Carl H. Hubbs of the Scripps Institution of Oceanography and Dr. Reeve M. Bailey of the University of Michigan, state that Florida's claims for record smallmouth bass are erroneous. The fish are largemouth bass, not smallmouth, the scientists claim.

MANY CLAIMS now being made for ammoniated dentifrices are not warranted by present clinical trial evidence, stated the August issue of the *Journal of the American Dental Association*. The *Journal* said that while preliminary reports have indicated that the ammoniated preparations may help prevent decay, it will be another year or longer before sufficient tests will have been carried out to provide a proper evaluation of the new products.

QUINOLINE DIPHOSPHATE, a synthetic antimalarial, has proved quite successful in the treatment of a cattle disease known as anaplasmosis, Dr. Herman Farley of Oklahoma A. and M. College recently reported to the American Veterinary Medical Association. Losses from anaplasmosis, often confused with cattle tick fever, are estimated at \$4,000,000 a year in the United States alone, Dr. Farley said.

COMBINING Benadryl with sulfamethazine brought rapid improvement in 40 babies suffering from infant diarrhea, Dr. C. Zahra Neumann of the Royal Malta University reports in the *British Medical Journal* (July 16, 1949, p. 132). Dr. Neumann believes that the symptoms of the disease can be explained, at least in part, as a manifestation of histamine intoxication.

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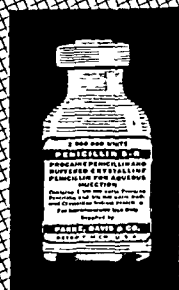
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PENICILLIN S-R is supplied in one-dose (400,000 units); five-dose (2,000,000) and ten-dose (4,000,000) rubber-diaphragm-capped vials. When diluted according to directions, each cc. contains 300,000 units of crystalline procaine penicillin-G and 100,000 units of buffered crystalline sodium penicillin-G. The one-dose vial is also available if desired with an accompanying ampoule of Water for Injection, U.S.P.



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PERCENTAGE STRENGTH PENICILLIN SOLUTIONS

by
Wm. P. O'Brien*

FOR ease of preparation, speed and accuracy, the writer offers the following method for use in the preparation of solutions of penicillin of various percentage strengths.

One need only remember that a Penicillin Unit is defined as the penicillin activity contained in 0.6 microgram of the Food and Drug Administration's master standard which is approximately equivalent to one Oxford Unit. Therefore, one milligram of penicillin will contain 1666.6 units. For preparing solutions of percentages of penicillin the pharmacist need only determine the number of milligrams of the salt necessary to make the required per cent and then multiply this figure by 1666.6 in order to obtain total number of penicillin units in solution.

The following prescription will serve to demonstrate the method.

R
Sol. penicillin G sodium
0.5%..... 15.0 cc.
Sig. Two drops O. U. every
2 hours.

To make 15 cc. of a 0.5% solution of any salt, 75 mg. are required. To find the number of units of penicillin salt: 75 × 1666.6 equals 124,995 units.

Those pharmacists who keep a stock solution of penicillin on hand will find it an easy task to determine the number of cc. stock solution necessary to fill this prescription; e. g., 5 cc. of a stock solution of strength 25,000 units/cc. need be diluted to 15-cc. volume. The necessity for the proper handling of stock solutions of penicillin should,

of course, be remembered. Crystalline penicillin in solution is unstable and should not be held more than three days at refrigeration temperature. If it is buffered it may be held for as long as seven days under refrigeration. Amorphous penicillin may be held for seven days under refrigeration, since this drug is buffered by the impurities present. The holding of stock solutions of penicillin by pharmacists for periods longer than those outlined above will result in the prescribing of penicillin solutions of improper potencies.

For those pharmacists who receive but a few prescriptions for penicillin solutions the following procedure is suggested:

Since crystalline penicillin G sodium or potassium is supplied in vials of 100,000, 200,000, 500,000 and 1,000,000 units each, the package containing 200,000 units must be used. In order to determine amount of diluent to use, find out number of units contained in each cc. of finished solution, then divide this number into number of units contained in the vial. For example, 124,995 units per 15 cc. equals 8333 units per cc.; 200,000 units (amount contained in vial) per 8333 (number of units contained in each cc. of finished solution) equals 24 cc. Therefore, the penicillin salt should be dissolved in several cc. of diluent and this solution poured into a graduate and the volume brought up to 24 cc. (The salt in this case will readily dissolve in 5 cc. of diluent, and after this solution is transferred to the graduate, several rinsings of the vial are possible with the required balance of diluent, thereby insuring complete removal of penicillin salt.)

* Chief Pharmacist of Touro Infirmary, New Orleans, La.

(Continued on Page 576)

SUMMARY OF ANTIMALARIAL DRUGS



by W. CLARK COOPER*

AT LEAST a dozen chemical compounds, commercially obtainable or under large-scale investigative use, are currently being recommended for the management of malaria. All of these, except quinacrine, pamaquine, and the cinchona alkaloids, have been introduced during the past 5 to 10 years. Since the new drugs have appeared in medical literature under a variety of synonyms, including numbers and proprietary names, there is little wonder that much confusion prevails as to the identity and relative merits of the available antimalarial agents.

This summary is not intended to be a critical review of all recent advances in the chemotherapy of malaria. Original references should be consulted for detailed descriptions of the various drugs and for evidence to support the generalizations which are necessary in a summary.¹ Those familiar with the problems of making definitive comparisons of therapeutically active compounds will appreciate the need for many qualifying statements throughout the appraisals. As the characteristics of the predominant strains of malarial parasites in a given area may greatly influence the choice of drug regimens, dosage recommendations are intended to be merely representative. In all cases they refer to the oral dosage for an average adult.

It is now accepted that the early development of sporozoite-induced malaria in man takes place in fixed-tissue cells, as has been demonstrated for *Plasmodium vivax*. It is further believed that persistent fixed-tissue

forms, not yet actually demonstrated histologically, are responsible for the repeated relapses of *P. vivax* and *P. malariae* infections, but that such persistent forms do not occur in *P. falciparum* infections. In vivax and malariae malaria, drugs which are active only against the asexual erythrocytic parasites will stop acute attacks, or will suppress parasites and fever as long as administered, but will not prevent relapses. The actual relapse rates following such noncurative therapy will be determined by a variety of factors, including strain of parasite, intensity of exposure, and status of host resistance.

Curative chemotherapy of vivax or malariae malaria implies a significant reduction in the relapse rate, as contrasted with that following noncurative therapy, and presumably results from partial or complete destruction of persistent fixed-tissue parasites.

Protective treatment may achieve either causative prophylaxis or suppression. Causative prophylaxis implies action against the sporozoites or the succeeding pre-erythrocytic stages, prior to the first invasion of erythrocytes, and, if complete, permanently prevents infection. Suppression implies action, usually against asexual erythrocytic parasites, sufficient to keep an infection latent at least as long as the drug is being administered. It may be carried out during a period of active exposure to infection, or it may follow treatment of an acute attack.

Gametocytocidal action indicates activity against the sexual erythrocytic parasites, which are necessary for the infection of mosquitoes. Such action, theoretically of public health value, does not in itself appear to affect the clinical course of malaria in the patient being treated.

* Surgeon, Laboratory of Tropical Diseases, Microbiological Institute, National Institutes of Health, Bethesda, Md.
Adapted from an article published in the June 10 issue of *Public Health Reports*, U. S. Public Health Service, Washington, D. C.

All of the antimalarial drugs included in the summary are rapidly absorbed from the gastrointestinal tract. In the description of each drug a brief statement will be made as to its tissue localization, i.e., its tendency to become concentrated in certain cells of the body, and its rate of elimination, either by excretion or degradation. In general, a compound which is markedly localized in tissues is more effective if loading or priming doses are given at the start of therapy. Such a compound, particularly if its rate of elimination is slow, will be long retained in the body, permitting wider spacing of individual doses, shorter courses of treatment, and prolonged periods of protection against relapse immediately following therapy.

Names included in the U. S. Pharmacopoeia or approved by the Council on Pharmacy and Chemistry of the American Medical Association, will be used as principal designations. Official designations in other countries, code numbers, and proprietary names will be included as synonyms (without capitalization).

Quinine

6-Methoxy- α -(5-vinyl-2-quinuclidyl)-4-quinolinemethanol

Salts: Sulfate of U. S. P. XIII (83% base) is the salt most commonly used in the United States; dihydrochloride (82% base) is the most soluble salt and is used parenterally. There are many other official and proprietary preparations.

Dosage:

Therapeutic: 2 Gm. per day (0.65 Gm., three times daily) for 7 days.

Suppressive: 0.65 Gm. per day.

Quinine is only slightly localized and is rapidly metabolized; plasma concentrations drop 90% within 24 hours after dosage.

The most important antimalarial action of quinine is against asexual erythrocytic parasites. This stops acute attacks, but clearance of parasites and subsidence of fever are often not as rapid as with large doses of quinacrine or the better 4-aminoquinolines. Vivax malaria may relapse as early as one or two weeks after therapy. Quinine has limited effect upon vivax and malariae gametocytes but no effect on falciparum gametocytes.

Quinine has no causative prophylactic action. When given protectively, it will usually suppress *P. vivax* and *P. malariae*, but parasites appear after drug is discontinued.

It is less efficient as a suppressant of *P. falciparum*.

Quinine is also important because of the potentiation observed when it is given in combination with certain 8-aminoquinoline drugs, resulting in lowered relapse rates in vivax malaria.

Quinine may be given intravenously, but should be given slowly in a large volume of fluid. It is not well absorbed from muscle and may cause local necrosis. Therapeutic doses commonly cause cinchonism, with tinnitus, vertigo, partial deafness, visual disturbances, headache, and nausea. An occasional individual with idiosyncrasy may have severe cinchonism, urticaria, or angioneurotic edema from a single small dose.

Totaquine

Totaquine is a standardized mixture of cinchona alkaloids, which according to U. S. P. XIII contains "not less than 10% of anhydrous quinine and not less than 70% and not more than 80% of total anhydrous crystallizable cinchona alkaloids, the remainder consisting substantially of diluents." A typical currently obtainable preparation contains 50% cinchonine, 18% cinchonidine, and 10% quinine. As all of these alkaloids possess antimalarial activity, treatment with totaquine results in more economical use of the active ingredients of cinchona bark.

Dosage is similar to that of quinine, and the therapeutic efficacy is essentially the same. It can be given only orally. Some preparations may produce nausea and vomiting more frequently than does quinine.

Quinacrine

6-Chloro-2-methoxy-9-(4-diethylamino-1-methylbutylamino)acridine

Synonyms: Atabrine, atebrian, acriquine, chemiochin, chinacrin, crinodora, erion, halfkinine, italchina, mepacrine B. P., metoquina, metaquine.

Salts: Hydrochloride of U. S. P. XIII is the dihydrochloride, dihydrate (79% base).

Dosage:

Therapeutic: 0.2 Gm. of salt x 5 (every 6 hours) on day 1; then 0.1 Gm. three times daily for 6 days, a total of 2.8 Gm. in 7 days.

Suppressive: 0.1 Gm. of salt per day.

Quinacrine is markedly localized, especially in leukocytes, liver, spleen, heart, and lungs. It is slowly eliminated, so that plasma concentrations drop only about 50% per week after the last dose.

The principal action of quinacrine is against asexual erythrocytic parasites. When loading doses are given, it stops acute attacks of malaria at least as rapidly as does quinine. Persistent exoerythrocytic stages of *P. vivax* are not affected; so vivax malaria will relapse, but parasites usually do not reappear until at least 4 to 6 weeks after treatment. Quinacrine resembles quinine in being ineffective against gametocytes of *P. falciparum*.

When given protectively, quinacrine has no causative prophylactic action, but it effectively suppresses erythrocytic parasites. Such suppression, continued for a sufficient time after exposure (e.g., 4 weeks), permanently prevents falciparum malaria, although resistant strains have been demonstrated. Vivax (and probably malariae) infections appear after drug is discontinued.

Quinacrine may be given intramuscularly in dosage of 0.4 Gm. and with rigid precautions it may be administered intravenously.

Although in recommended dosage quinacrine is usually well tolerated, more undesirable reactions occur than accompany treatment with 4-amino quinolines or chlorguanide. It temporarily dyes the skin yellow, but this is not a toxic reaction. It may produce anorexia, nausea, vomiting, and diarrhea, especially at the start of therapy. It is a cortical stimulant and in susceptible subjects may cause temporary mental symptoms. In a small proportion of cases, serious skin reactions occur.

Chloroquine

7-Chloro-4-(1-diethylamino-1-methylbutyl-amino)quinoline

Synonyms: Aralen, resoquin, nivaquine B, tanakán, SN 7618, 3377 RP.

Salts: Diphosphate (62% base) for oral use; hydrochloride (89% base) for parenteral use. Nivaquine B is chloroquine sulfate.

Dosage:

Therapeutic: 1.0 Gm. of diphosphate (0.6 Gm. of base) as initial dose, followed in 6 hours by 0.5 Gm. (0.3 Gm. of base), then 0.5 Gm. (0.3 Gm. of base) once daily for 2 days, making a total of 2.5 Gm. of salt (1.5 Gm. of base) in 3 days.*

Suppressive: 0.5 Gm. of salt (0.3 Gm. of base) once weekly.

Chloroquine is markedly localized in liver, spleen, kidneys, lungs, and white blood cells.

* As with all slowly eliminated drugs, single-dose therapy (0.6 Gm. of base) will prove adequate in many cases, especially if followed by a suppressive course.

Degradation and excretion are slow; plasma concentrations drop only about 60% per week after last dose.

The principal action of chloroquine is against asexual erythrocytic parasites. It stops acute attacks of malaria promptly. It does not affect persistent exoerythrocytic stages, but vivax relapses are usually delayed until at least 7 to 10 weeks after treatment. Falciparum infections are usually cured. No data are available on quartan relapses. Gametocytes of *P. falciparum* resist chloroquine.

There is no action against pre-erythrocytic forms. Protective treatment suppresses parasites of all three species; *P. vivax* (and probably *P. malariae*) may appear after drug is stopped.

Chloroquine hydrochloride may be given intramuscularly in dosage of 0.2 to 0.3 Gm. of base. Very slow intravenous injection is still in an experimental stage.

Chloroquine produces few side-actions in recommended dosages and it does not discolor the skin. Blurring of vision, pruritus, mild headache, and gastrointestinal complaints have been reported.

Oxychloroquine

7-Chloro-4-(3-diethylamino-2-hydroxypropylamino)quinoline

Synonym: SN 8137.

Salt: Diphosphate (62% base).

Dosage: Not established.

Oxychloroquine, or SN 8137, resembles chloroquine in many respects. Although it is less toxic in man it is also slightly less active as an antimalarial. Small-scale trials in experimental and naturally acquired malaria have not shown any advantages over chloroquine. It has not been given definitive trial as a suppressant. Oxychloroquine is not commercially available.

Sontochin

7-Chloro-4-(4-diethylamino-1-methylbutyl-amino)-3-methylquinoline

Synonyms: SN 6911, 3038 RP, ontoquine, ontoquine, sontochin, nivaquine (except nivaquine B, which is a salt of chloroquine).

Salts: Disulfate, monohydrate (61% base), has been most widely used in the United States. French investigators have used various other salts, of which nivaquine C, the dihydrochloride, is preferred.

Dosage:

Therapeutic: Dosages of base corresponding to those of chloroquine.

Suppressive: 0.1 Gm. of base per day; 0.3 Gm. twice weekly; or 0.3 Gm. once weekly.

Sontochin, like quinacrine and chloroquine, becomes concentrated in leukocytes, liver, spleen, and certain other body tissues; plasma concentrations decline about 25% per day after the last dose.

Like the other 4-aminoquinolines, ontochin acts against asexual erythrocytic parasites and alleviates acute attacks of malaria. Relapses of *P. vivax* can be expected at about the same intervals as after treatment with quinacrine, or sooner. It is not gametocytocidal against *P. falciparum*.

Sontochin is not a causative prophylactic but is an effective suppressant. It does not stain the skin and is well tolerated at recommended dosages. Parenteral use has been reported, but details are not available.

Sontochin is not commercially available in the United States.

SN 10,751**7-Chloro-4-(3-diethylaminomethyl-4-hydroxyanilino)quinoline**

Synonyms: Amodiaquin, camoquin, miaquin, CAM-AQ1.

Salt: Dihydrochloride, dihydrate (77% base).

Dosage:

Therapeutic: Dosages of base corresponding to those of chloroquine.

Suppressive: Dosages of base corresponding to those of chloroquine; 0.6 Gm. of base every 2 weeks has also been provisionally suggested.

The drug is rapidly metabolized in the body. The degradation products are chemotherapeutically active and are slowly eliminated, plasma concentrations declining at the rate of about 60% per week.

The antimalarial activity of this drug appears to be analogous to that of chloroquine. In controlled studies, relapses of vivax malaria are delayed after SN 10,751 almost as long as after chloroquine. Falciparum infections are apparently cured.

In practical application, SN 10,751 has been shown to be well tolerated. Lassitude, anorexia, and insomnia have been described with long-continued *high daily* dosage.

This drug is not commercially available in the United States.

Chlorguanide

N_1 -(*p*-Chlorophenyl)- N_2 -isopropyl biguanide

Synonyms: Paludrine, proguanil B. P., M. 4888, guanatol, drinupal, palusil, tirian.

Salt: Monohydrochloride (87% base) is commonly given orally. The acetate and lactate are more soluble and are recommended for parenteral use.

Dosage:

Therapeutic: 0.6 Gm. of hydrochloride per day (0.3 Gm. twice daily) for 10 days; alternative regimen (for *P. vivax* only), single dose of 0.3 Gm., followed by suppressive course.

Suppressive: 0.3 Gm. of salt once weekly; 0.2 Gm. twice weekly; or 0.1 Gm. daily

There is considerable localization of chlorguanide in erythrocytes, leucocytes, kidneys, and liver. Chlorguanide as such disappears rapidly from the blood plasma after dosage, but there is evidence that at least part of it is converted into an active metabolic product.

In *P. falciparum* infections, chlorguanide acts as a causative prophylactic and usually cures. Some strains of *P. falciparum* show resistance to the drug to a degree which has prompted the suggestion that a more rapidly effective drug such as quinacrine be used for first day of treatment and that 0.1 Gm. of chlorguanide be taken daily for 6 weeks after therapy. Chloroquinide is an effective suppressant of *P. vivax* and there is evidence of action against pre-erythrocytic stages. All parasites are not eradicated, so that infections appear after suppression is discontinued. It alleviates acute attacks of vivax malaria over a wide dosage range but this effect is often relatively slow. Relapses of *P. vivax* occur at about the same rate and time as after quinacrine. Chlorguanide stops acute attacks of quartan malaria; no data are available on prophylaxis or cure. Chlorguanide renders falciparum gametocytes noninfective to mosquitoes.

Acquired resistance to chlorguanide has been conclusively demonstrated in the malaras of lower animals and will soon be reported for human malaria.

Chlorguanide acetate has been given intravenously in doses up to 100 mg. or 400 mg. Intramuscular injection has also been reported as well tolerated, although studies in lower animals provide evidence of local tissue damage.

The toxicity of chlorguanide is low. Dosages of 1.0 to 1.4 Gm. per day have been tolerated for 14 to 28 days without permanent ill effects. With such high dosages, nausea, vomiting, diarrhea, and mild hematuria have been described.

Pamaquine

6-Methoxy-8-(4-diethylamino-1-methyl-butylamino)quinoline

Synonyms: Plasmochin, plasmoquine, praequine, gamefar, quipenyl.

Salts: Naphthoate (approximately 45% base), monohydrochloride (90% base).

Dosage:

Therapeutic: 30 mg. of base per day (10 mg. three times daily) concurrent with quinine sulfate, 2 Gm. per day (0.65 three times daily) for 14 days.

Suppressive: Not used.

Pamaquine is localized only to a moderate degree in liver, lungs, and brain, and it is quickly metabolized. Its physiological disposition is markedly altered by concurrent quinacrine or chlorguanide, leading to much higher plasma concentrations than with corresponding doses of pamaquine alone.

Pamaquine has relatively weak action on asexual erythrocytic parasites. Its practical usefulness results from the fact that it will destroy the persistent forms responsible for vivax relapses, an effect which is enhanced by the concurrent administration of quinine. Dosage of the order recommended above reduces relapse rates of naturally acquired vivax malaria but will not cure early heavy infections.

In toxic dosage pamaquine will destroy the pre-erythrocytic forms of *P. vivax* and *P. falciparum* but this action is only of theoretical interest, as an effective dosage cannot be long tolerated.

Small doses of pamaquine (e.g., 10 mg. three times daily for 5 days) will eliminate gametocytes of *P. falciparum*.

Pamaquine regularly produces methemoglobinemia which, if of sufficient degree (5 to 10% of total hemoglobin), will be accompanied by cyanosis; abdominal cramps are common. Acute intravascular hemolysis is an infrequent but serious reaction, more common in Negroes. Concurrent quinacrine or sulfonamides should be avoided with all 8-aminoquinolines.

Pentaquine

6-Methoxy-8-(5-isopropylaminoamylamino)-quinoline

Synonym: SN 13,276.

Salt: Phosphate (75% base).

Dosage:

Therapeutic: 60 mg. of base per day (10 mg. every 4 hours) or 30 mg. of base per day (10 mg. every 8 hours), given concurrently with quinine sulfate 2 Gm. per day (0.65 Gm. three times daily) for 14 days.

Suppressive: Not used.

Like pamaquine, pentaquine is rapidly degraded in the body. There is apparently only slight tissue localization. Concurrent quinine results in slightly higher plasma levels, but concurrent quinacrine produces greatly elevated plasma concentrations of pentaquine.

Although pentaquine has activity against the asexual erythrocytic parasites of *P. vivax*, its real usefulness depends upon its ability, especially when given in combination with quinine, to lower the relapse rate of vivax malaria. The higher dosage given above is necessary for cure of heavy early experimental infections but the lower dosage has lowered relapse rates of late, naturally acquired infections. The optimal dosage of concurrent quinine is not yet defined.

In very high dosage, pentaquine is a causative prophylactic against *P. vivax*, but its unsuitability for prolonged administration precludes such use in the field.

Pentaquine will produce a moderate elevation in methemoglobin, roughly proportional to dosage, so that some patients will exhibit cyanosis. Abdominal cramps, anorexia, nausea, vomiting, or drug fever may occur. Acute intravascular hemolysis is a potential hazard. Patients on the higher dosage should be hospitalized; those on the lower dosage may be ambulatory, but should be closely observed.

Isopentaquine

6-Methoxy-8-(4-isopropylamino-1-methyl-butylamino)quinoline

Synonym: SN 13,274.

Salt: Mono-oxalate (74-79% base).

Dosage:

Therapeutic: Same as that of pentaquine.

Suppressive: Not used.

Isopentaquine is a close analogue of pentaquine. When given concurrently with quinine it is equal to pentaquine in reducing the relapse rate of experimental vivax infections and is somewhat less toxic. It is not commercially available.

Conclusions

Most of the newer compounds have not been studied under sufficiently varied conditions to warrant final conclusions as to their relative merits, but several of them appear to

(Continued on Page 559)

ADR

DENTAL REMEDIES RECENTLY
ACCEPTED BY A. D. A. COUNCIL
ON DENTAL THERAPEUTICS



Admission to Accepted Dental Remedies means that a product and the methods by which it was marketed at the time of consideration were not found to be in violation of the published rules of the Council on Dental Therapeutics. A summary of the rules appeared in This Journal, 7:153 (April), 1946. Accepted products are reconsidered periodically.

ANESTHETICS—LOCAL¹

Procaine HCl 4%, Epinephrine 1:50,000—Abbott: Each cc. is stated to contain procaine HCl, 0.04 Gm.; epinephrine, 0.00002 Gm.; sodium bisulfite, 0.001 Gm.; potassium sulfate, 0.0025 Gm.; sodium formaldehyde sulfoxylate, 0.0005 Gm.; in distilled water. Marketed in 2-cc. ampuls. Manufactured by *Abbott Laboratories, North Chicago, Ill.*

BARBITURATES²

Pentobarbital Sodium, U. S. P. (See *Accepted Dental Remedies*, ed. 14, p. 25.)

Pentobarbital Sodium Capsules $\frac{3}{4}$ gr., $1\frac{1}{4}$ gr. (Pembules).

Pembrin: Each tablet is stated to contain pentobarbital, $\frac{2}{20}$ gr., and aspirin, 5 gr. Manufactured by *Novocol Chemical Mfg. Co., Inc., Brooklyn.*

Nembutal Sodium: A brand of pentobarbital sodium, U. S. P.

Sterile Powder Nembutal Sodium: Marketed in ampuls, 0.25 Gm., 5 cc.; 0.5 Gm., 10 cc. and in vials, 0.5 Gm., 20 cc.

Capsules Nembutal Sodium, $\frac{1}{2}$ gr., $\frac{3}{4}$ gr., $1\frac{1}{2}$ gr.

Sterile Solution Nembutal Sodium, 0.25 Gm.: Each 5 cc. is stated to contain nembutal sodium, 0.25 Gm.; propylene glycol, 1 cc.; alcohol, dehydrated, 0.5 cc., and water for injection, to make 5 cc. Marketed in 5-cc. ampuls.

Sterile Solution Nembutal Sodium, 50 mg. per cc.: Each cc. is stated to contain nembutal sodium, 50 mg.; propylene glycol, 0.2 cc.; alcohol, dehydrated, 0.1 cc., and water for injection, to make 1 cc. Marketed in 50-cc. multiple dose vials.

Suppositories Nembutal Sodium, $\frac{1}{2}$ gr., 1, 2 and 3 gr.

Nembutal: A brand of pentobarbital.

Elixir Nembutal: Each fluidounce represents

the equivalent of nembutal sodium, 2 gr.; alcohol, 25%; saccharin; flavor; Yerba Santa base; sweet-tose liquid, and caramel. Marketed in 4-fluidounce, one-pint and one-gallon bottles.

Capsules Nembutal and Aspirin: Each capsule is stated to contain nembutal sodium, $\frac{1}{2}$ gr. (as nembutal, 29.6 mg.); acetylsalicylic acid, 5 gr.; corn starch, 51 mg.

Nembutal Calcium: A brand of pentobarbital calcium.

Tablets Nembutal Calcium, $\frac{1}{2}$ gr., $\frac{3}{4}$ gr., $1\frac{1}{2}$ gr.

Enterab Tablets, Nembutal Calcium, $\frac{3}{4}$ gr., $1\frac{1}{2}$ gr. Manufactured by *Abbott Laboratories, North Chicago, Ill.*

FLUORINE-CONTAINING SUBSTANCES³

Flursol: Each 100 cc. contains sodium fluoride, 2 Gm., in distilled water. Distributed in plastic containers (2 oz.) or wax-lined bottles (1 quart). Manufactured by *Novocol Chemical Mfg. Co., Inc., Brooklyn, N. Y.*

ANTIBIOTICS AND ANTISEPTICS⁴

Rapid/Repository Penicillin (Crystalline Penicillin G Procaine and Buffered Crystalline Penicillin G Potassium for Aqueous Injection): Each single-dose vial is stated to contain crystalline penicillin G procaine, 352,450 units; crystalline penicillin G potassium, 117,500 units; sodium citrate; sodium carboxymethylcellulose, and Tween 80. In 1-, 5- and 10-dose vials. Manufactured by *Abbott Laboratories, North Chicago, Ill.*

Penicillin G Potassium Chewing Troches, 20,000 Units: Stated to contain penicillin G potassium, paraffin wax, lactose, saccharin, c lor and flavor. In boxes of 6.

Penicillin G Potassium Troches Soluble, 5000 Units: Stated to contain penicillin G potassium, karaya gum, magnesium stearate, acacia, mineral oil, sucrose powder and flavoring. In boxes of 24 and 100. Manufactured by *E. R. Squibb & Sons, New York City.*

DRUG THERAPY IN ENDODONTIA:

QUESTIONS AND ANSWERS*

Q. For what purposes are drugs or chemicals used in endodontia?

A. With the possible exception of oral surgery, drugs will be employed more frequently in endodontia than in any other phase of dental practice.

¹ See *Accepted Dental Remedies*, ed. 14, p. 39.

² See *Accepted Dental Remedies*, ed. 14, p. 22.

³ See *Accepted Dental Remedies*, ed. 14, p. 70.

⁴ See *Accepted Dental Remedies*, ed. 14, p. 59.

* Abstracted from a report by F. D. Ostrander, D.D.S. M.S., Ann Arbor, Mich., prepared for the Council on Dental Therapeutics of the American Dental Association. (*J. A. D. A.* 39: 238, 1949.)

The following are purposes for which the endodontist will use drugs or chemicals: (1) Preoperative sedation. (2) Control of pain during pulpectomy or root resections. (3) Occasionally for enlargement or dehydration of the pulp canal. (4) Irrigation and washing of the pulp canal to remove organic material and debris. (5) Disinfection of the pulp canal and periapical areas. (6) Systemically, on occasion, for the control of severe fulminating periapical infections. (7) Control of pain following endodontic procedures.

Q. What drugs should be used preoperatively?

A. The drugs best suited for this purpose are the barbiturates. It has been clearly demonstrated that barbiturates oppose the toxic effects of local anesthetics and generally reactions to them will be minimized or eliminated by proper premedication. The choice of the barbiturate and the dosage will depend upon the individual patient and conditions. In general a rapidly acting barbiturate of brief duration which causes few side reactions is to be desired. Members of the barbiturate group generally suitable include pentobarbital sodium, 0.1 to 0.2 Gm.; hexobarbital (*Accepted Dental Remedies*), 0.13 to 0.26 Gm.; Seconal sodium (*New and Non-official Remedies*), 0.1 to 0.2 Gm.

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Q. What agents are best suited for the chemical enlargement of root canals?

A. Phenolsulfonic acid, sulfuric acid and hydrochloric acid are most frequently used. Concentrated sulfuric acid should not be employed because of its extremely corrosive action. It is usually used in concentrations of 30 to 50% and hydrochloric acid is most commonly used in 30% strength. At the University of Michigan, School of Dentistry, phenol-sulfonic acid made according to the following formula is preferred:

Concentrated sulfuric acid	97 cc.
Phenol crystals.....	90 Gm.
Hold at 100° C. for 20 hours.	

The above preparation is not as caustic or destructive as sulfuric acid and has a syrupy consistency which makes it relatively easy to handle.

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purpose is sodium hypochlorite solution U. S. P. or one of its modifications such as Labarraque's solution or "Hychlorite" A. D. R. It has the advantages of being mildly antiseptic and of being noninjurious to the periapical tissues.

Q. Which commonly used drugs are most suitable for root canal and periapical antiseptics?

A. The following are among the better ones for general use:

(1) Camphorated *p*-chlorophenol; prepared by triturating 21 Gm. of camphor with 9 Gm. of *p*-chlorophenol. The antiseptic is not injurious to the periapical tissues and is highly effective clinically.

(2) Chloroazodin U. S. P. ("Azochloramid") in a 1% solution in triacetin is effective but may discolor anterior teeth and sometimes produces a copious exudate in the root canals even after they become sterile. However, its effectiveness and bland character justify its inclusion in the armamentarium of the endodontist.

(3) Beechwood creosote is effective and relatively nonirritating but it has such a strong odor and taste that its use is decreasing. However, it deserves a place as an alternate drug when others are not effective.

This list of drugs is not intended to be complete. Many may make rational use of other drugs. Such caustic and irritating preparations as formaldehyde-cresol mixtures and iodized phenol are purposely omitted from the list. Their routine use is contraindicated because of their injurious effect on periapical tissues.

Q. What is the status of the sulfonamides for topical use in treatment of root canal and periapical infections?

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A. Such use of the antibiotics has not yet been adequately evaluated but there is reason to believe that certain members of this group may have some value, either alone or in combinations. Reports on penicillin have been conflicting, which may be due in part to the fact that many strains of organisms isolated from root canals are penicillin-resistant. Best results have generally been reported with high concentrations of penicillin. A combination of penicillin and streptomycin may be more effective than penicillin alone. Using strong suspensions of penicillin the author and his associates did not obtain results equivalent to those obtained with more commonly used drugs, but in a study now being conducted in which a strong suspension of penicillin and streptomycin is being used, preliminary results have been much better.

The following tentative conclusions are justified: (1) Penicillin-resistant organisms are frequently en-

countered in root canals, making the routine use of penicillin alone inadvisable. In any case which does not respond readily to penicillin other drugs should be substituted. (2) To be most effective in root canal therapy the antibiotics must be used in high concentration. (3) Because of the frequent presence of resistant organisms it is probable that combinations of antibiotics will be desirable to increase the range of effectiveness. (4) Penicillin and streptomycin are only two of many antibiotics. Other members of this group or combinations may be found superior to either penicillin or streptomycin.

Q. Is a special culture medium required when penicillin or other antibiotics are used in the treatment of root canal or periapical infections?

A. Yes. When penicillin is used in root canal treatments a culture medium should be used which will neutralize any penicillin which is carried into it from the tooth. The most commonly used agent for this purpose is penicillinase which is added to the medium in concentration of approximately 0.66 Schenley unit per cc.

Q. What drugs are useful in the control of the pain which occasionally follows endodontic procedures?

A. For the milder types of pain the use of the antipyretic group will usually suffice. Acetylsalicylic acid is the safest of this group. The official dose is 0.3 Gm. but most adults may be given a 0.6-Gm. initial dose followed by 0.3 Gm. every hour if needed. Acetophenetidin may be used when aspirin does not control the pain but it is potentially more toxic and therefore must be used with greater caution. The dose is 0.3 Gm. and may be repeated at intervals of 3 hours. Whether mixtures of acetylsalicylic acid, acetophenetidin and caffeine are superior to the individual drugs is not clearly established. However, analgesics should not be prescribed or dispensed in a way that will encourage the patient to use them for self-medication.

When the more severe types of pain occur, codeine orally is best suited for the ambulatory patient. The official dose is 0.03 Gm. but it may be desirable to give 0.06 Gm. to adults to be followed by 0.03-Gm. doses at intervals of 3 hours when pain is severe. Some clinicians prefer to give codeine in combination with acetylsalicylic acid or acetophenetidin. They may be given together by prescription or they may be alternated. Morphine, 8 to 10 mg., is more effective for the control of severe pain but is not desirable for the ambulatory dental patient because of its side effects. Some substitutes for morphine are now under clinical trial but they are not yet evaluated for use in dentistry.

Malaria Authority Joins W. H. O.

Dr. G. Robert Coatney, malaria authority of the U. S. Public Health Service, has been appointed an adviser to the Expert Committee on Malaria of the World Health Organization, which met at Geneva, Switzerland, August 10 to 17.

SUMMARY OF ANTIMALARIAL DRUGS

(Continued from Page 556)

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1. *Treatment of acute attacks of malaria.* Quinine, quinacrine, chloroquine (and analogous 4-aminoquinolines), and chlorguanide, when given in adequate dosage, will nearly always stop acute attacks of malaria. Choice of drug, therefore, depends upon such factors as rapidity of effect, incidence of side-actions, length of treatment period, incidence of falciparum relapses, latent periods before vivax relapses, natural or acquired strain resistance, and the cost and availability of drug. Chloroquine is superior in most of these respects and is currently regarded as the drug of choice for routine therapy.

2. *Suppression of malaria.* The aforementioned drugs, when given in properly spaced doses, will usually keep malaria latent under conditions of exposure in the field or following therapy of an acute attack. Choice of drug depends upon the incidence of break-throughs and of undesirable side-actions, the required frequency of dosage, and the persistence of protection if doses are missed, as well as upon cost and availability. Chloroquine in weekly dosage has proved to be a satisfactory suppressant, but further comparative trials are needed to determine the relative merits of chloroquine, chlorguanide, and the less well known 4-aminoquinolines.

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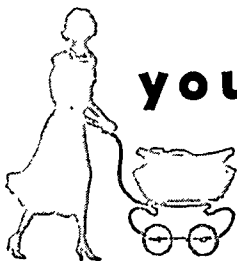
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public's health-- your first concern



THE HEART AND HEART DISEASE No. 1 in a Series

♦ ♦ ♦ ♦ ♦ ♦ ♦

THE heart, that powerful dynamo which services the body with blood carrying food and oxygen, weighs only about 10 ounces. Yet each day it performs a prodigious feat, beating over 100,000 times to pump 10 tons of blood through miles of circulatory vessels to meet the body's needs. During a lifetime of 70 years it expands and contracts about 2,500,000,000 times. If it were to stop for more than a few minutes, the body would die.

The heart is a hollow muscular organ, the size of a fist, situated within the chest. Enclosed in a fibrous sac, called the pericardium, it is divided into two halves, the left and the right, by a vertical septum or partition. Each of these halves is again subdivided into two chambers, an auricle and a ventricle, which are connected by valves. Blood leaves the right ventricle, and enters the pulmonary artery to be carried to the lungs where it rids itself of carbon dioxide and takes on oxygen for delivery to the body cells. From the lungs it flows to the left auricle through the pulmonary veins, passes to the left ventricle and on to the body through the aorta. Picking up carbon dioxide and other wastes from the various parts of the body, the blood returns through the venae cavae to the right auricle. It then flows to the right ventricle to begin again the continuous cycle. The time consumed for a complete circuit averages about 12 seconds.

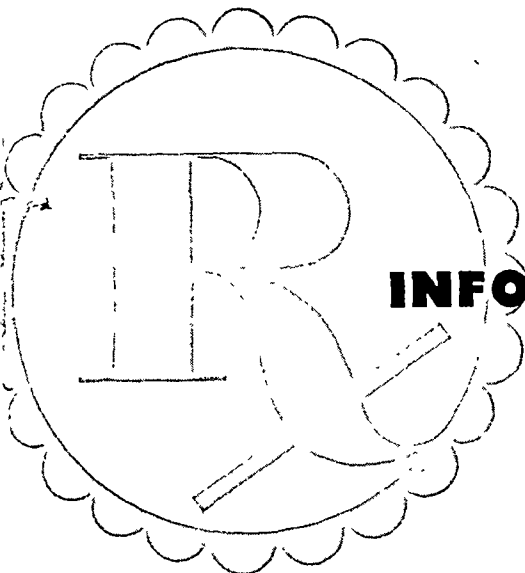
The range of variation in normal hearts is great. Perfectly normal hearts may differ

considerably in size, in shape, and in action. Weight may vary from 200 to 400 grams; pulse rate from 35 to 100 at rest, increasing on exercise to rates of 200; systolic blood pressure may range from 90 to 150 millimeters of mercury and diastolic pressure from 60 to 90; and cardiac output from 2.95 to 4.61 liters per minute. The normal heart output varies with the state of health, altitude, emotional disturbance, amount of exercise, and pregnancy. Thumping, skipping, and extra beats often occur from excitement, effort, or stimulants. Murmurs are common in persons with normal hearts.

The latitude of variation in the normal heart makes detection of heart disease from small physical or functional differences difficult. Further complicating the recognition of a cardiac ailment is the fact that there are no absolutely typical symptoms which always reveal its presence. For while there are many symptoms and signs which may indicate heart disease, these same symptoms and signs may arise from other causes. Their presence may or may not mean heart disease. Since only a physician can determine whether or not heart disease is present, it is important that persons presenting persistent symptoms which *may* indicate heart disease receive a correct diagnosis. Pharmacists can perform a singular service by advising such individuals to seek medical advice.

There are many common complaints associated with heart disease: Palpitation, shortness of breath, swelling of the legs, chest pain, fatigue, dizziness, fainting, insomnia, headache, and difficulties in digestion. Yet none of these are exclusive indicators of heart disease. For example, palpitation may be related to nervousness; breath-

(Continued on Page 575)



INFORMATION SERVICE

Members of the American Pharmaceutical Association are invited to submit their professional problems to the Journal, 2215 Constitution Ave., N. W., Washington 7, D. C., giving all pertinent details. Advisory service is provided by the A. Ph. A. library and technical staff and the Journal panel of technical consultants.

SOURCE OF TWEEN 80

Please inform me who manufactures an emulsifying agent known as "Tween 80."—N. S., India

"Tween 80" may be purchased from the Atlas Powder Co., Wilmington, Del.

PAS SUPPLIER

Please name a supplier for PAS (p-amino salicylic acid).—G. V., Spain

p-Amino salicylic acid is available from the Calco Chemical Division of the American Cyanamid Co., Bound Brook, N. J.

DIFFICULTY IN COMPOUNDING

What procedure should be followed in compounding the following prescription?

Saturated solution thymol
Hydrogen dioxide
Glycerin
Potassium chlorate, of each $\text{̄} \text{ii}$
Paint lesions in mouth t.i.d.
—O. G., California

The difficulty with the filling of this prescription is the relative insolubility of potassium chlorate. Potassium chlorate is said to be soluble 1 in 16.5 although there is some reason to believe that it is less soluble than this.

The glycerin will enhance the solubility slightly but not enough to permit the prescription to be filled. It would take a total volume of somewhat over 2 oz. of water to

dissolve this amount of potassium chlorate. The prescriber should do one of two things—either permit you to saturate all of the fluids with potassium chlorate or should permit it to be diluted considerably with water.

SPRAY-TOP BOTTLES

I would like to know where I can obtain the soft plastic, spray-top bottle now being used in the cosmetic field.—A. S., New Jersey

The spray-type container which you mention is available from the Bakelite Corp., 30 E. 42nd St., New York 17, N. Y. It is our understanding that the spray attachment is in the collar of the bottle and is sealed in after the container is filled.

SUBY SOLUTION FORMULAS

Can you supply a formula for Suby Solution and Suby Solution G? What is the difference between the two?—M. G., Oklahoma

There are several Suby Solutions, including Suby Solution G. These are discussed in a review article in the *Bulletin of the American Society of Hospital Pharmacists*, 5: 208 (1948), where the following formula is given for Suby's Solution:

Sodium citrate.....	18.9 Gm.
Citric acid.....	19.0 Gm.
Distilled water, q. s. ad.....	1000.0 cc.

The formula for Suby Solution G is:

Citric acid.....	32.3 Gm.
Magnesium oxide, anhydrous....	3.8 Gm.
Sodium carbonate, anhydrous....	4.4 Gm.
Distilled water, q. s. ad.....	1000.0 cc.

Typical Days



FROM THE SECRETARY'S DIARY FOR JUNE
AND JULY

18th All this day with Idaho Pharmaceutical Association Secretary Jim Lynch taking in the beauties of Idaho's mountains, lakes and countryside. The trip to Arrow Rock Dam was especially delightful. At the end of the day reached Shore Lodge at McCall on one of the Payette lakes where peace and quiet reign supreme.

19th All day meeting and greeting Idaho pharmacists arriving for the annual convention at Shore Lodge and in the evening addressing this progressive group at their annual banquet on the "Importance of the Intangibles."

20th In spite of beautiful weather and an unusually attractive location the convention hall was filled when the forty-third annual convention of the Idaho State Pharmaceutical Association came to order. Under the skillful direction of first vice-president E. B. Knopp the program proceeded expeditiously and addresses by Charles Lanwermyer and Bert Mull were particularly interesting. At noon addressed the convention on "The New Challenge to American Pharmacy." In the evening a steak fry in the pines some distance from Shore Lodge provided pleasing diversion.

21st Now bidding goodbye to Idaho pharmacists and motoring back to Boise with Richard Knowlden, State drug inspector, who probably knows more about individual pharmacies in Idaho than anyone else. On to Portland by way of the Union Pacific.

22nd An early arrival at Portland, so early in fact that the Multnomah Hotel management was still asleep and there was considerable difficulty about rooms until Oregon Pharmaceutical Association Secretary Jack Lynch got busy. Most of this day spent in the company of Mr. and Mrs. Leib Riggs, who had arranged a trip to Mount Hood with dinner at the Timberline Lodge. Fortunately the sun came through the dense fog long enough to allow us to see the top of this snow capped mountain.

23rd This day visiting prescription pharmacies in Portland and meeting with Kappa Psi and the North Pacific A. Ph. A. Branch

officers, going over next season's program and membership campaign.

24th In the morning attending the meeting of the Oregon State Pharmaceutical Association and listening to addresses by Bert Mull, Mrs. Doris Rae Alexander, Secretary, Women Pharmacists of Oregon, and Stewart F. Lamb of the U. S. Treasury Department. At noon addressing a combined luncheon of the Oregon Veteran Drug-gists, the Oregon Pharmaceutical Association, Lambda Kappa Sigma and the Women Pharmacists of Oregon. Here Dr. A. G. Bettman presided in friendly fashion. In the evening attending the annual banquet of the Oregon Pharmaceutical Association and leaving in time to board the train for Butte with prospects of not being able to complete speaking assignments there because of a hotel employee's strike which may make banquetting impossible.

25th A wire received en route caused a change in the original plans and we were met at Deer Lodge about 40 miles west of Butte by O. J. Guanell and motored to Anaconda where the final session and banquet of the Montana Pharmaceutical Association had been arranged. A fine turn-out of pharmacists and their ladies who listened attentively to the message from A. Ph. A.'s Washington headquarters. By motor to Butte, arriving at Hotel Finlen while the strike was still in progress but the Women's Auxiliary of the Montana Association had kindly put the bedroom in order and there was no difficulty in getting a good night's sleep and seeing something of the city in this copper country on Sunday morning.

26th Now departing for Spokane and glad to have the company of Fred Felter, who was on his way back to Portland. A late evening arrival at Spokane meeting Ron Robertson, H. E. Henderson and other officers and members of the Washington State Pharmaceutical Association at the Davenport Hotel. Also a visit to the prescription shop conducted by Ron Robertson which is a professional pharmacist's dream of what can be done.

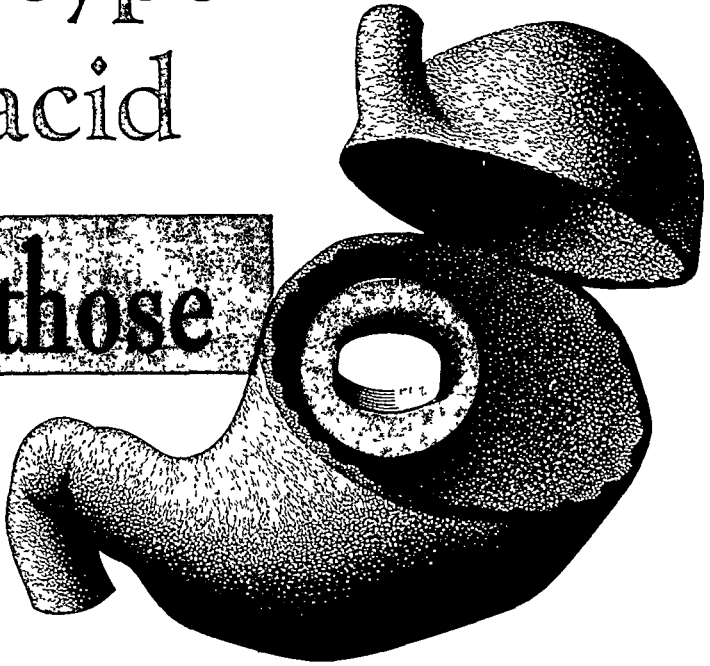
27th In the morning a trip around Spokane with Mr. and Mrs. Robertson and then to the meeting hall at the Davenport. It was a pleasure to see Deans Goodrich and Dirstine, Professor Rising and many others whose names make Washington State pharmaceutical news. An unexpected call to pinch-hit for Idaho's lieutenant-governor Donald Whitehead, who had been unavoidably prevented from filling the role of guest speaker at the luncheon and later addressing the convention after Bert Mull and Charles Lanwermyer, both of whom made the circuit of Western State pharmaceutical association meetings during these pleasant June days. In the evening enjoying

(Continued on Page 561)

New type antacid

Carmethose

for
better



management of peptic ulcer

**Carmethose gives prolonged
control with no adverse effects**

Carmethose promptly lowers gastric acidity, and its protective tenacious coating has been observed in the stomach for as long as three hours.¹

Adult dose is 2 to 4 tablets or teaspoonfuls 4 times daily between meals.

Carmethose Tablets: *sodium carboxymethylcellulose, 225mg. and magnesium oxide, 75mg* Bottles of 100

Carmethose Liquid: *5% concentration of sodium carboxymethylcellulose* Bottles of 12 oz.

Ciba

PHARMACEUTICAL PRODUCTS, INC., SUMMIT, NEW JERSEY
CARMETHOSE.—Trade Mark

2/1504

Advantages over adsorbent gels:

1. *Non-constipating*—hydrophilic gel promotes normal elimination.^{1, 2}
2. *Reduction of acidity in two ways*—prompt action by ion exchange is followed by classical buffering action.
3. *Palatable*—small, easily swallowed tablets and pleasantly flavored liquid—preferred by patients.²

Advantages over soluble alkalis:

1. *No acid rebound*—effectively inhibits acid-pepsin activity, with no secondary hypersecretion.
2. *Protective coating*—mucin-like gel is rapidly formed and clings to ulcer crater and gastric mucosa.
3. *Non-systemic*—cannot disturb acid-base balance because it is non-absorbable.

¹ Brick, I.B. Amer J Dig Dis, *In Press* 2 Bralow, Spellberg & Necheles Scientific Exhibit #1112, A.M.A., Annual Session 1949

TYPICAL DAYS

(Continued from Page 562)

the annual banquet at which E. P. Ryan kept the audience laughing with his dissertation on "The Human Side of Politics." Among the pleasant interludes a visit with pharmacist W. E. Nelson of Sequim, who is a one-man chamber of commerce for his town and, in addition to lauding its pharmaceutical importance, extolls the virtues of its famous bacon and it is really worth talking about. Now a quick trip to the Great Northern depot to board the flyer for Chicago and from there to Washington, reaching the Capitol City on the morning of June 30 in time to join the Pharmaceutical Survey Committee at its final meeting, June 30 and July 1.

JULY

5th Work resumed at the office following the long Fourth-of-July weekend much of which was spent by this writer in reviewing the piles of correspondence, publications, releases, and other material which had accumulated during the western trip. Also a visit to Mike Korakas, our gardener, who was laid up at Georgetown University Hospital following an abdominal operation. The heat and humidity of Washington were most unpleasant after the cooling effects of the north pacific climate.

7th Today the Steering Committee of the Committee on Status of Pharmacists in Government Service met to review Army and Navy pharmaceutical affairs with Chairman Einbeck and George Frates and representatives of the military services in attendance. Also reviewing building expansion plans with the architects and planning the hospital pharmacy institute by telephone with Dr. Dolezal of the American Hospital Association in Chicago and Herbert Flack in Philadelphia.

9th These hot and humid days endeavoring to work out ways and means of cooling and drying the air in a building not equipped with air conditioning. Saddened by word from Philadelphia that Ambrose Hunsberger died yesterday.

14th Yesterday afternoon to Baltimore discussing financial problems and plans with H. A. B. Dunning, member of the A. Ph. A. Council Finance Committee, and then to Philadelphia to participate in the final dinner session of the Seminar at the Philadelphia College of Pharmacy and Science. Today in New York conferring with Fred Lascoff and M. F. Arkus, who handles public relations for the American Heart Association. Now to the Chemists Club for dinner with Treasurer Schaefer and Finance Committee Chairman Swain.

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Deceased Members

Berk, Samuel, Brooklyn, N. Y.
Carroll, Laura M., Aberdeen, S. Dak.
Crawford, Dean B., Atlantic City, N. J., Aug. 12, 1919
Eby, John S., Newport, Pa.
Englehardt, Ralph W., Rochester, N. Y., July 6, 1949
Hunsberger, Ambrose (a life member), Philadelphia, Pa., July 8, 1949
Keller, Browning E., Santa Monica, Calif., Nov. 24, 1948
Kimmel, Margaret, Valdosta, Ga., Aug. 5, 1949
Schmidt, Henry (a life member), Elizabeth, N. J., Aug. 6, 1949
Taylor, Naomi, South Gate, Calif.

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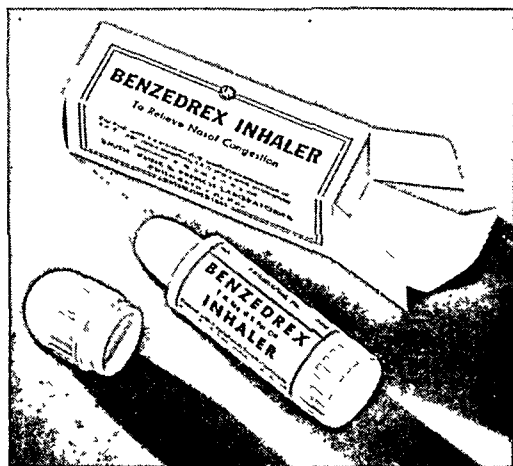


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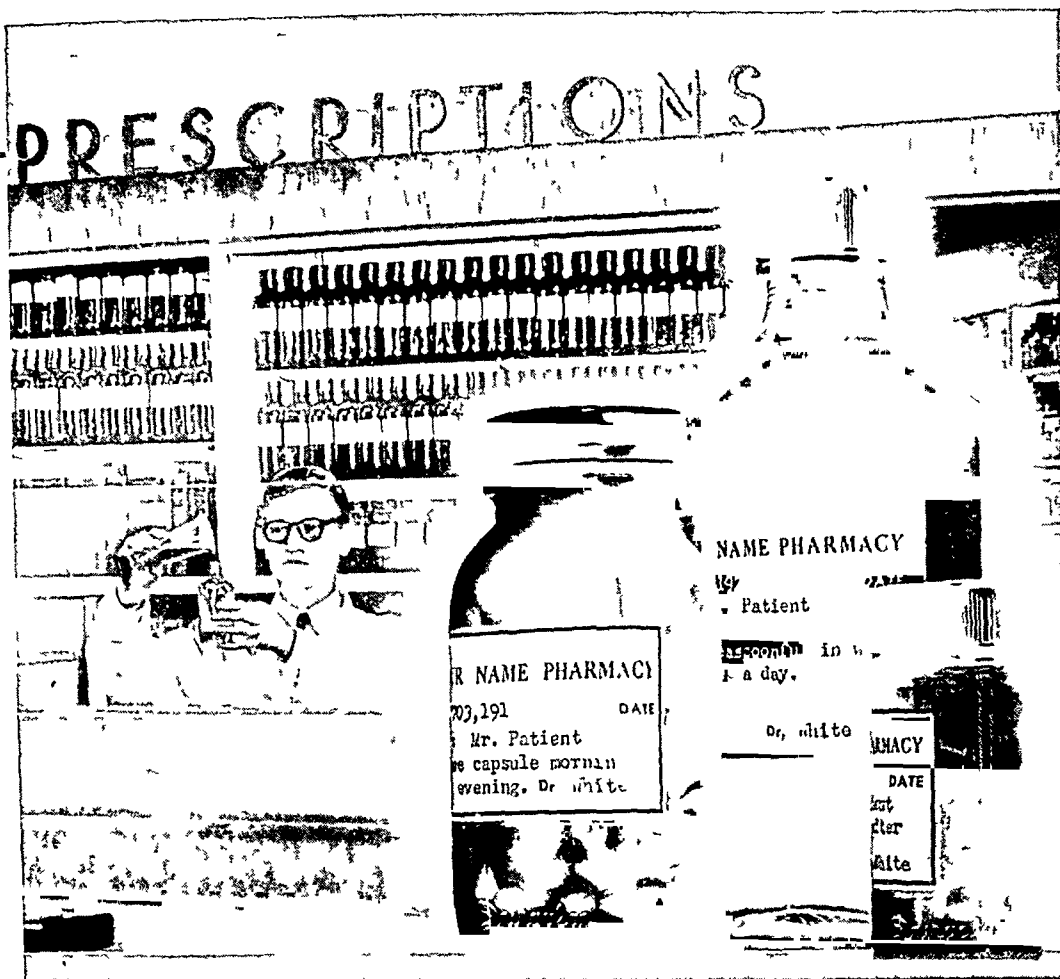
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AMMONIATED MERCURY SALICYLIC ACID INCOMPATIBILITY

By C. LEE HUYCK*

THIS paper endeavors to correlate the chemical aspects with the therapeutic and practical aspects of an incompatibility of importance to both pharmacist and physician.

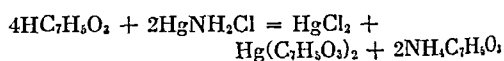
Ammoniated mercury is one of the most frequently used substances in psoriasis because it does not stain the skin or clothing. Because the action is weaker than chrysarobin, tar and pyrogallol, attempts have been made to increase its effectiveness by combining it with other drugs. Salicylic acid has been used with ammoniated mercury to promote the absorption of the mercury salt.

Severe Skin Irritations

Sulzberger¹ stated it is impossible to estimate the number of patients who have suffered severe skin irritations from the combined use of ammoniated mercury and salicylic acid. It is well known that combinations of these two drugs produced a synergistic effect as far as skin irritations were concerned. Fifty per cent of all persons tested reacted in some degree to an ointment containing 5% of salicylic acid and 5% ammoniated mercury. The following questions arise: Is the irritation due to the keratolytic effect of salicylic acid followed by a greater than ordinary absorption of ammoniated mercury, is the irritation due to the acidifying action of the salicylic acid, or is the irritation caused by compounds formed by chemical reaction of the two ingredients?

Siemens and Schreiber² found that patients who could tolerate 10% salicylic acid

ointment and 10% ammoniated mercury ointment separately reacted severely when the combination of the two ointments was applied. These workers found that when two molecules of salicylic acid are mixed with one molecule of ammoniated mercury the two chemicals reacted to form corrosive sublimate, mercuric salicylate, and ammonium salicylate according to the following equation:



This reaction shows that equal weights of the two reactants resulted in enough salicylic acid to convert all the ammoniated mercury to chloride and salicylate.

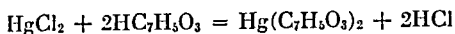
Oil-in-water emulsion creams are more irritating than anhydrous bases. In water-containing ointment the transformation was incomplete in three months, while water-free ointments remained unchanged after several months of standing.

Studied Irritating Effect

Siemens and Schreiber³ continued their studies on the irritating effect of mixtures of salicylic acid and ammoniated mercury in ointments. Of the products formed from the chemical reaction only mercuric chloride was found to have an irritating action on the skin. The irritation became evident when corrosive sublimate in petrolatum was applied to the skin in 1% concentrations. If salicylic acid was added to this ointment irritation increased. A combination of mercuric chloride and salicylic acid was more irritating than the mercuric chloride alone. This may be due to the keratolytic action of salicylic acid or to the products of double

* Director, Department of Pharmacy, Howard College, Birmingham, Ala. Presented before the Section on Practical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, Jacksonville, Fla., April, 1949.

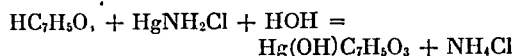
decomposition of the two chemicals as represented by the following equation:



→ This reaction shows that equal weights of the two reactants are just about enough of both chemicals to complete the reaction.

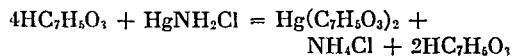
The combination of salicylic acid and ammoniated mercury was more irritating the greater the excess of unchanged salicylic acid after the reaction had taken place. An ointment with 5% salicylic acid and 10% ammoniated mercury was less irritating than an ointment with 10% salicylic acid and 5% ammoniated mercury.

The reaction of 5% salicylic acid and 10% ammoniated mercury in an ointment containing moisture may be expressed by the following equation:



This reaction shows that twice the amount of ammoniated mercury as salicylic acid forms basic mercuric salicylate and ammonium chloride. This accounts for the lessened irritation when the ointment was applied to the diseased skin.

The reaction of 10% salicylic acid and 5% ammoniated mercury in an ointment may be expressed by the following equation:



This reaction shows that twice the amount of salicylic acid as ammoniated mercury forms mercuric salicylate and salicylic acid. The mercuric salicylate is somewhat soluble in a solution of alkali halide. The excess salicylic acid and the mercury salicylate in solution account for the irritating action of the ointment on diseased skin.

The clinical report stated that the reaction took place much more rapidly on the skin than in the ointment jar. This is to be expected because the ointment is contaminated with moisture as soon as it is applied to the skin.

Summary

1. Siemens and Schreiber² have shown that equal weights of salicylic acid and ammoniated mercury in an ointment base produced mercuric chloride, mercuric salicylate, and ammonium salicylate which are irritating when applied to the skin.

2. Equal weights of mercuric chloride

and salicylic acid produced mercuric salicylate and hydrochloric acid.

3. In the presence of moisture twice the amount of ammoniated mercury as salicylic acid forms basic mercuric salicylate and ammonium chloride.

4. Twice the amount of salicylic acid as ammoniated mercury forms mercuric salicylate and salicylic acid. Since mercury salicylate is somewhat soluble in a solution of alkali halide, and since salicylic acid is an active keratolytic, the irritation of this combination is accounted for.

REFERENCES

1. Sulzberger, M. B., "Dermatologic Allergy," Charles C Thomas, Springfield, Ill., p. 425 (1940).
2. Siemens, H. W., and Schreiber, E., *Dermatologica*, 93, 1-15 (1946).
3. Siemens, H. W., and Schreiber, E., *ibid.*, 93, 89-96 (1946).

California to Require Four-Year Course of All Applicants

An amendment to the California Pharmacy Law, effective January 1, 1950, provides that after that date no application for examination can be accepted unless the applicant is a graduate of a four-year course in a recognized college of pharmacy. The October, 1949, examination will be the last examination at which applicants with less than four years of college may be accepted.

The present California requirements are as follows and will apply to the October examination: Persons studying pharmacy prior to 1927 must have completed a course of not less than two years; between 1927 and 1932, the course must have been not less than three years; and for those who studied pharmacy after 1932 the course must have been four years.

Applications may be filed with the Secretary, California State Board of Pharmacy, 507 Polk Street, Room 313, San Francisco, Calif. The examination will be held in Los Angeles on October 4, 5, and 6, and in San Francisco on October 18, 19, and 20.

Iodine Abstracts and Reviews

A new bimonthly periodical, *Iodine Abstracts and Reviews*, is being prepared by the Iodine Fellowship at Mellon Institute, Pittsburgh 13, Pa., to provide summaries of scientific and technical literature relating to the uses of iodine and its compounds in chemistry and in the industries. From time to time there will be presented reviews of specific phases of the science and technology of iodine.

Complimentary subscriptions to *Iodine Abstracts and Reviews* may be obtained by addressing the Iodine Educational Bureau, Inc., 120 Broadway, New York 5, N. Y.



ASSOCIATIONS

The annual installation dinner of the **Dutchess County (N. Y.) Pharmaceutical Association** was held on June 8 in Poughkeepsie and the following officers were installed for the coming year: Vincent Logolbo, president; Milton Luks, first vice-president; Arthur Levinsohn, second vice-president; Edward Martin, secretary; and Gustav Klein, treasurer. Speakers at dinner were: W. Rutherford James, general manager and sales director of Towns and James Pharmaceutical house; Frank Emma and Nicholas Gesoalde, president and secretary, respectively, of the **New York State Pharmaceutical Association**.

Members of the **Westchester County (N. Y.) Pharmaceutical Association** at its May meeting heard John Cooper of Schenectady discuss New York's new compensation, liability and health insurance law which becomes effective in 1950. A film, "Sell as the Customers Like It," also was shown at the May meeting. At a recent meeting of the Westchester group, Dr. A. Holla, County Health Commissioner, outlined ways by which the pharmacist can help curb cancer. Col. Frank Smith, State narcotics commissioner, and J. J. O'Brien of Rochester, vice-president of the State Association, debated a proposed law which would require a doctor's prescription for sale of patent medicines containing any narcotic.

Thomas V. Kenny, Troy (N. Y.) attorney, spoke at the annual dinner party of the **Troy Area Pharmaceutical Association** on May 22 at the Van Schaick Island Country Club. Dean Francis E. O'Brien of Albany College of Pharmacy installed the newly elected officers.

Dr. J. R. Williams, Jr., discussed compulsory medical care at the May meeting of the **Rochester Pharmaceutical Association**. A film "Energy Release from Food," also was shown.

At the annual dinner meeting of the **Staten Island Pharmaceutical Association** in May, Frank A. Emma and Edgar Bellis were guest speakers.

District 6 of the **Mississippi State Pharmaceutical Association** held its annual spring meeting on May 29 in Meridian, Miss. Officers elected were: J. B. Tutor, chairman; Phyllis Caver, vice-chairman; and R. M. Hamill, secretary. All are from Meridian.

"Interpretation of Amendments—New York State Narcotic Laws" was the topic discussed by Col. Frank J. Smith, Chief of the State Narcotic Control Section, at the May meeting of the **Italian Pharmaceutical Association** in Buffalo.

MANUFACTURERS

Ciba Pharmaceutical Products, Inc., Summit, N. J., has announced the election of Norman F. Storm as executive vice-president of the company. Mr. Storm has been in charge of production for the firm for nearly 20 years and since March, 1943, has been *vice-president in charge of production*.

The new director, Division of Medical Sciences of **McNeil Laboratories**, is Dr. Charles F. Kade, Jr. In this capacity he will direct the research and development activities of the company.

The first pharmaceutical plant to be built in Argentina primarily for large-scale production of penicillin has been completed by **E. R. Squibb & Sons**. The \$4,000,000 manufacturing project was built almost entirely with Argentine funds.

The *Overflow*, a monthly publication for Upjohn sales and branch office personnel, was a first prize winner in the 1949 International Industrial Publications contest. The contest is sponsored by the International Council of Industrial Editors, and the winners were announced during their annual convention at Toronto, Canada. A new Philadelphia Branch of **The Upjohn Co.** was opened early in July with Fern E. Fox, who was transferred from the Minneapolis Branch, as sales manager.

James Hill, Jr., chairman of the board and president of **Sterling Drug, Inc.**, has been elected to the board of directors of **Brand Names Foundation**. Mr. Hill was named to fill the unexpired term of the late Edward S. Rogers, past chairman of the Board of Sterling Drug, who died recently. Brand Names Foundation is a nonprofit, educational institution supported by manufacturers, advertising media and advertising agencies.

A. Eugene DeWald of **Smith, Kline & French Laboratories**, Philadelphia, Pa., was recently awarded the Karr fellowship, which is given to a promising member of the scientific staff of the firm for further study and advancement in his respective field. Mr. DeWald will attend the University of Minnesota for a period of three years, studying for his doctorate in physical chemistry.

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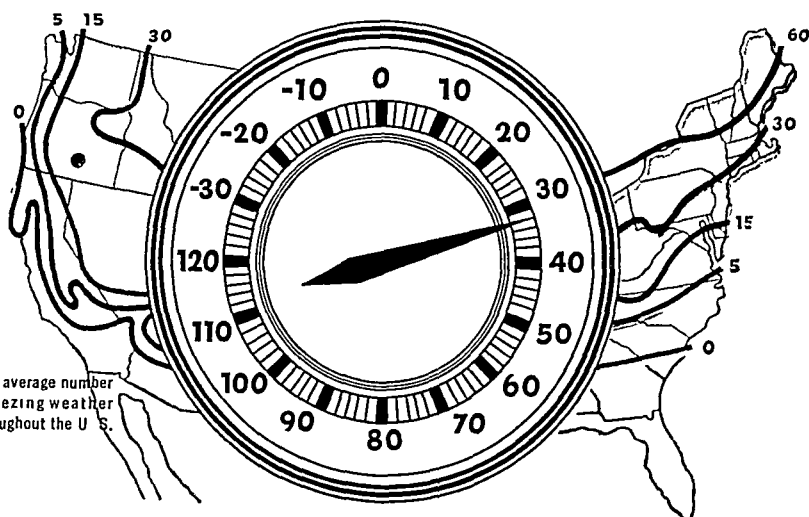
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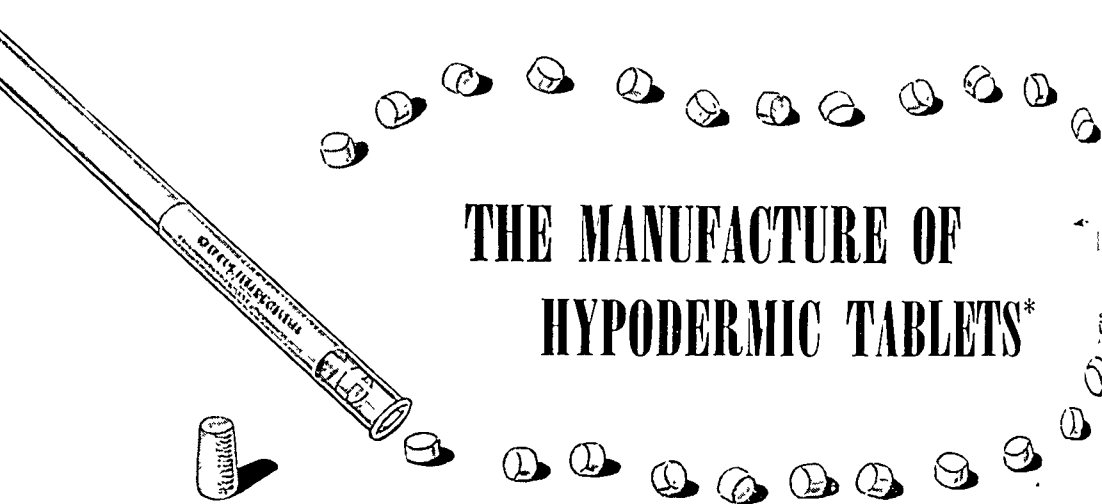
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THE MANUFACTURE OF HYPODERMIC TABLETS*

by G. J. SPERANDIO and H. G. DeKAY

MEDICATION in the form of tablets is used extensively in the United States today, and the reasons for its popularity are many. Specific advantages which tablets offer over other forms of medication are: Ease of administration, stability, accuracy and concentration of dosage, portability, rapid solubility, economy, absence of alcohol, and convenience to the dispenser.¹ These features have caused the tablet industry to expand rapidly, and as early as 1914 it was estimated that from one-fourth to one-third of all the medicaments in the United States were administered in tablet form.² Although much has been written concerning tablets and their manufacture, very little specific information has been told, as the manufacturers are naturally reluctant to share their trade secrets. The need for research on tablet manufacture has been recognized and various investigations have been started.³ This paper is a report on experiments on the preparation of hypodermic tablets.

Tablets are defined as "unit dosage forms of medication containing one or more medicinal agents with or without diluents, obtained by molding the mixture in the form of a fine powder, or compressing it in the form of a granular powder into a suitable shape."⁴

Tablets in general may be classified under two headings: Compressed tablets, which are made by mechanical compression of a prepared granulation, and molded tablets, which are made by molding a wet paste in

suitable forms, ejecting the wet tablets, and drying them.

The majority of hypodermic tablets are made by molding, and the process has changed very little since it was introduced to the profession in 1878 by Dr. R. M. Fuller.⁵ This method consists of mixing the medication with milk sugar, adding alcohol and/or water to make a paste, and pressing it into molds. The tablets thus formed are then expelled and dried.

Slow Method of Manufacture

Present-day industry still uses this slow method of manufacture because of the rigid specifications for hypodermic tablets. Since they are put into solution for injection they must be completely soluble, must disintegrate almost immediately, and must form a perfectly clear solution. They must contain no excipients which would have either a chemical reaction with the medicinal ingredients or a physiological action on the patient. They must be small, yet sufficiently well formed to withstand handling and packaging. Wolff states that "since hand production is slow, the need for such tablets by mechanical production is obvious."⁶

If a granulation could be formulated which, when compressed on a tablet machine, would yield a tablet containing all of the above qualities, the field of hypodermic tablet manufacture would be greatly advanced. The purpose of this work was to investigate the possibilities of making hypodermic tablets by compression on a tablet machine.

* A contribution from the Research Laboratories, Purdue University, School of Pharmacy, Lafayette, Ind. Presented before the Section on Practical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, San Francisco, Calif., August, 1948

Experimental

In order to have a definite standard of comparison, samples of seven different hypodermic tablets made by a commercial manufacturer were checked for weight, disintegration time, and clarity of solution. All of the tablets with the exception of one weighed between 0.5 and 0.6 grains and dissolved to form a clear solution. The average disintegration time was 37 seconds.

From the literature, the following substances were selected for use in making a granulation: Lactose, white dextrin, maltose, dextrose, *d*-galactose, mannitol, sorbitol, levulose, calcium levulinate, soluble starch, and aminoacetic acid. All of the materials with the exception of white dextrin, soluble starch, and calcium levulinate were found to dissolve satisfactorily to give a clear solution. The materials deemed satisfactory were granulated with both water and alcohol, and the granulations were examined for their physical properties and their compressibility on a single punch tablet machine. Combinations of these substances in varying proportions were also granulated and tested. Upon compression, all granulations showed a tendency to bind and cap; none made a firm tablet.

It was decided to add an adhesive agent to the granulations to facilitate compression and attain a harder tablet. Granulations of the above substances were made using the following adhesives in varying amounts: Sucrose, glucose, dextrose, gelatin, acacia, and sorbitol. The granulations were made in two ways. First the adhesive was added to the substance in a dry form and the mixture was granulated with water. Next the adhesive was dissolved in water and the powders were granulated with the solution. It was concluded that adhesive substances are more effective when added to the granulation in solution than when mixed in as dry powder. It was also determined that a 2% aqueous solution of glucose seemed to make the best granulation with aminoacetic acid,

and that this aminoacetic acid granulation offered definite possibilities for compression—much more so than any of the other substances.

A trial batch of tablets of strychnine sulfate of $\frac{1}{30}$ grain was formulated with aminoacetic acid as the base and a 2% solution of glucose as the granulating agent. Compression was attempted on a Stokes' rotary tablet machine using a $\frac{3}{16}$ -inch die. Results were good but not entirely satisfactory as it was noticed that there was a slight tendency toward sticking upon continued running of the machine. A limited number of lubricants were tried using aminoacetic acid granulation as the trial granulation. Powdered boric acid, citric acid, tartaric acid, sodium stearate, and sodium chloride were added to the granulation in varying proportions. Powdered boric acid in the amount of 12% was the only substance to offer satisfactory lubrication to the granulation.

Six different batches of hypodermic tablets were made, primarily for the purpose of determining whether the aminoacetic acid base and the boric acid lubricant would compress satisfactorily with different amounts and different kinds of medicinal agents. The results are shown in the table below.

Four of the six granulations made compressed satisfactorily in every respect and the other two compressed fairly well, but evidenced slight sticking which was overcome by minor adjustments of the machine. All of the resulting tablets were excellent in appearance and formed a clear solution when dissolved in water. All but one had a disintegration time under 35 seconds.

It should be emphasized that the preceding work has been primarily of an experimental nature to determine the feasibility of making hypodermic tablets by compression and that several aspects of this method must be further investigated before the manufacture on a commercial basis can be advocated. The question of sterility must be settled, since hypodermic tablets should be

Results of Experiments on Six Drugs

Tablet	Ease of Compression	Hardness	Average Weight, in Grams	Disintegration	Solution
Strychnine SO ₄ $\frac{1}{30}$ gr.....	Good	Good	0.060	35 sec.	Clear
Atropine SO ₄ $\frac{1}{120}$ gr.....	Good	Good	0.067	20 sec.	Clear
Scopolamine HBr $\frac{1}{120}$ gr.....	Good	Good	0.057	15 sec.	Clear
Ephed. SO ₄ $\frac{3}{8}$ gr.....	Fair	Good	0.066	15 sec.	Clear
Morphine SO ₄ $\frac{1}{8}$ gr....	Good	Good	0.053	15 sec.	Clear
Na Phenobarb. $\frac{1}{4}$ gr. .	Fair	Good	0.061	65 sec.	Clear

sterile when received by the physician. A conveyor belt system might be set up in which the granulation would be sterilized during drying and then led into a special room containing the tablet machine, the room to be kept aseptic by lamps suitable for that purpose. Packaging of the tablets could be done in the same manner now in use.

The question of the toxicity of boric acid was considered since some authorities might question its use in tablets intended for injection. According to Sollman,⁷ quantities to 0.5 Gm. have no immediate reaction in normal individuals. Since each tablet would contain not more than 0.007 Gm. of boric acid, the amount might be small enough to be considered negligible; but again, this would have to be further investigated.

The use of aminoacetic acid as a base has two possible disadvantages: First, it is considerably more expensive than the bases used for molded tablets and might make the cost of compressed hypodermic tablets prohibitive. Second, it is not compatible with all types of medication although it can be used with most substances commonly found in hypodermic tablets. Aminoacetic acid itself forms neutral or slightly acid solutions and would be incompatible with strongly alkaline compounds.

However, our experiments indicate that compression of a completely soluble tablet is possible. The reported combination is the first which we have found. Quite possibly other combinations of soluble bases and

lubricants may be formulated which will result in a hypodermic tablet satisfying all the requirements. Experiments are being continued toward this end.

Conclusions

The following conclusions may be drawn from the work completed thus far:

1. Most water-soluble substances suitable for bases for hypodermic tablets do not possess enough cohesiveness to be used alone as bases.
2. An adhesive substance is more effective when added to the granulation in solution as the granulating agent than when mixed with the dry powders and granulated with water.
3. Aminoacetic acid seems to be a satisfactory base for most hypodermic tablets.
4. A 2% solution of glucose is the granulating agent of choice.
5. Powdered boric acid in high percentages is a satisfactory lubricating agent for aminoacetic acid granulations containing various medications.
6. Hypodermic tablets can be manufactured by compression on a tablet machine.

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Guidebook for Manufacturers

"Developing and Selling New Products—A Guidebook for Manufacturers," by Gustav E. Larson, Marketing Division, U. S. Department of Commerce, is now available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., for 25¢. Purpose of this booklet is to provide information which will aid business firms in answering such frequently asked questions as:

1. How and where may ideas for new products be found?
2. How may a company improve its chances of selecting a successful new product?
3. How may a new product suitable to customer needs and desires be built?
4. How should name, package, and trade-mark be chosen?

5. What points should be considered in planning a marketing program for a new product?

For purposes of this booklet, a broad definition of the term "new product" has been adopted. The definition used includes: (1) products entirely new and not previously manufactured; (2) products new to a manufacturer or industry; and (3) redesigned products. Both consumer and industrial products are discussed.

A public lecture series sponsored by the Chicago Technical Societies Council, which includes 60 scientific, engineering, and technical societies in the Chicago area, included a talk on "New Drugs and Their Uses" by Dr. F. Maher of the University of Illinois.

NEW FACULTY ASSIGNMENTS

(Continued from Page 545)

University of Texas

Three new professors have joined the University of Texas College of Pharmacy faculty. Dr. William Reese Lloyd becomes an associate professor while Melvin A. Chambers and Dr. Robert F. Doerge have been appointed assistant professors.

Howard College

Josephine Siragusa has been appointed instructor in pharmaceutical chemistry and Owen Crutcher has been named instructor in pharmacy at Howard College, Birmingham, Ala.

University of Houston

Dr. N. M. Ferguson has been named the first full-time director of the University of Houston School of Pharmacy. Dr. Ferguson, who has been in teaching for 19 years, was professor of chemistry at Ashland College, Ohio.

Philadelphia College of Pharmacy and Science

New members of the faculty of the Philadelphia College of Pharmacy and Science who assumed their teaching duties this Fall are: Dr. Nathan A. Hall, who came from the College of Pharmacy of the

University of Washington, Seattle; Dr. Roger E. Fox of Philadelphia, who became a member of the teaching staff in pharmacology; David Krigstein, Nina Sideri, Bernard B. Barshay and William H. Zubyk. Grafton D. Chase rejoined the chemistry staff and Dr. Eric Martin has inaugurated a course in biochemistry.

THE PUBLIC'S HEALTH

(Continued from Page 560)

lessness or dyspnea may be due to anemia or pulmonary diseases; precordial pain on exertion may be caused by muscle strain, pleuritis, intercostal neuralgia, or lesions of abdominal viscera; and swelling of the legs or edema may occur from liver and kidney diseases. It is obvious that some complaints, such as insomnia, faintness, and others, are more frequently due to other causes. It is nonetheless clear that if any of the symptoms mentioned is persistent, the individual needs medical attention whatever the underlying cause. By directing persons with such manifestations to see a physician, pharmacists can greatly assist in uncovering heart cases—thus contributing to the lengthening and the saving of lives.

1950 IODINE RESEARCH AWARD NOMINATIONS REQUESTED

Nominations are now being received by the AMERICAN PHARMACEUTICAL ASSOCIATION for the 1950 Iodine Educational Bureau Award recognizing outstanding research in the chemistry and pharmacy of iodine and its compounds as applied in pharmacy or medicine. Any member of the ASSOCIATION may propose a nominee by submitting eight copies of each of the publications to be considered in the competition, a biographical sketch of the nominee including date of birth, and a list of his publications. Eight copies of the nomination must be submitted to Robert P. Fischelis, Secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, 2215 Constitution Ave., N. W., Washington 7, D. C. To be eligible for the 1950 Award, nominations must be received on or before January 1, 1950.

A nominee must be a resident of United States or Canada. He must have accomplished outstanding research in the chemistry or pharmacy of iodine and its compounds as applied in pharmacy or medicine.

During the period covered by the nomination the nominee shall have been actively engaged in, shall have completed, or shall have published a report upon the line of investigation for which the award is made. During a period of two years prior to the date of nomination, the nominee shall not have been engaged in research under the sponsorship of the Iodine Educational Bureau, Inc.

The award consists of \$1000 and a diploma setting forth the reasons for selection of the recipient. It may be presented annually at the annual meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION.

The recipient will deliver a paper or lecture upon the subject of his scientific work at the meeting at which the award is conferred. His paper, or address, will then be published in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION. In addition to the sum of the award, the recipient will receive an allowance of not more than \$250 to defray his expenses in attending the meeting.

The recipient will be selected by an award committee which is appointed by the chairman of the ASSOCIATION's Council and which functions under prescribed rules. The present committee includes Justin L. Powers, chairman; Louis Gershenfeld, Charles O. Wilson, Harvey B. Haag, Heber W. Youngken, John C. Krantz, and Frank O. Taylor.

The award is now in its third year. The recipient of the first award was Dr. William T. Salter, Yale University pharmacologist. Dr. George M. Curtis, Chairman of the Department of Surgical Research and Professor of Surgery at Ohio State University, will be the recipient of the second award and will give the 1950 Iodine Award lecture.

A. Ph. A.'s Second Vice-President

Leib L. Riggs

LEIB L. RIGGS, practicing pharmacist and second vice-president of the AMERICAN PHARMACEUTICAL ASSOCIATION, was born February 7, 1900, in Dallas, Oreg. He received Ph.G. and B Sc. degrees from Oregon State College in 1922. He has owned and managed his own pharmacies since 1926 and now owns two prescription pharmacies in Portland, Oreg. He is past president of the Oregon State Pharmaceutical Association and Portland Retail Druggists Association. He joined the AMERICAN PHARMACEUTICAL ASSOCIATION in 1939 and has been a member of the House of Delegates during the past three conventions. He is now serving his third year as a member of the Oregon State Board of Pharmacy, and has served on numerous state and local legislative and pharmaceutical advisory committees. Mr. Riggs has been active in civic and fraternal affairs in Portland. He is a Mason and Shriner, past president of Kiwanis and Agenda clubs and a member of Delta Sigma Rho and Chi Phi fraternities.

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**PERCENTAGE STRENGTH PENICILLIN***(Continued from Page 551)*

More solution is made than is required to fill the prescription, but this cannot be avoided except by suggesting to the physician the dispensing of 12 cc. instead of 15 cc., thereby making it possible to use a vial containing 100,000 units and avoiding waste of the excess solution obtained with the vial of 200,000 units.

The following table will serve to supply information commonly required for making percentage penicillin ophthalmic solutions:

Penicillin Percentage, Unitage and Weight*

Per Cent	Total Units	Units per Cc.	Total Weight in Mg
0 03	7,500	500	4 5
0 06	15,000	1,000	9 0
0 10	25,000	1,666 6	15 0
0 50	125,000	8,333	75 0
1 00	250 000	16,666	150 0

* Expressed in milligrams contained in 15 cc. of solution

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The Story

History of Perandren* Reductions

January, 1939	. . .	10%
June, 1943	. . .	10%
January, 1947	. . .	20%
August, 1947	. . .	35%
February, 1949	up to	30%
June, 1949	up to	35%

*Ciba brand of testosterone
propionate, U. S. P.

Behind Perandren Price Reductions

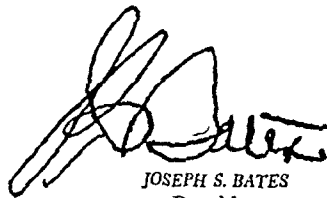
AGAIN in June, Ciba reduced the prices of Perandren by amounts up to 35 per cent. This was the second such reduction in 1949.

Ciba introduced Perandren in 1936 as the result of the successful synthesis of testosterone propionate after years of exhaustive research. Ever since, this product has been subjected to a policy of investigation of all phases of its clinical application as well as the efficiency of its manufacture. This policy has been supported by large investments of money and research effort.

One result of this broad program has been the data and conservative advice which Ciba has been able to place at the disposal of the medical profession. Another result has been a gradual increase in manufacturing efficiency with its concomitant savings in cost. These savings, together with those which have come from the steadily increasing demand for Perandren, have been passed on in large part to the user, in conformity with what Ciba conceives to be its responsibility to the medical profession and the public.

Ciba was the first to bring about drastic reductions in the price of testosterone propionate. Now Perandren is benefiting many times the original number of patients, and, with the announcement of another price reduction, Perandren is less than 20% of its original price.

This is concrete evidence of our adherence to the Ciba policy of sharing economies from technological advances with those who enjoy the therapeutic benefits of Perandren, the Ciba brand of testosterone propionate.

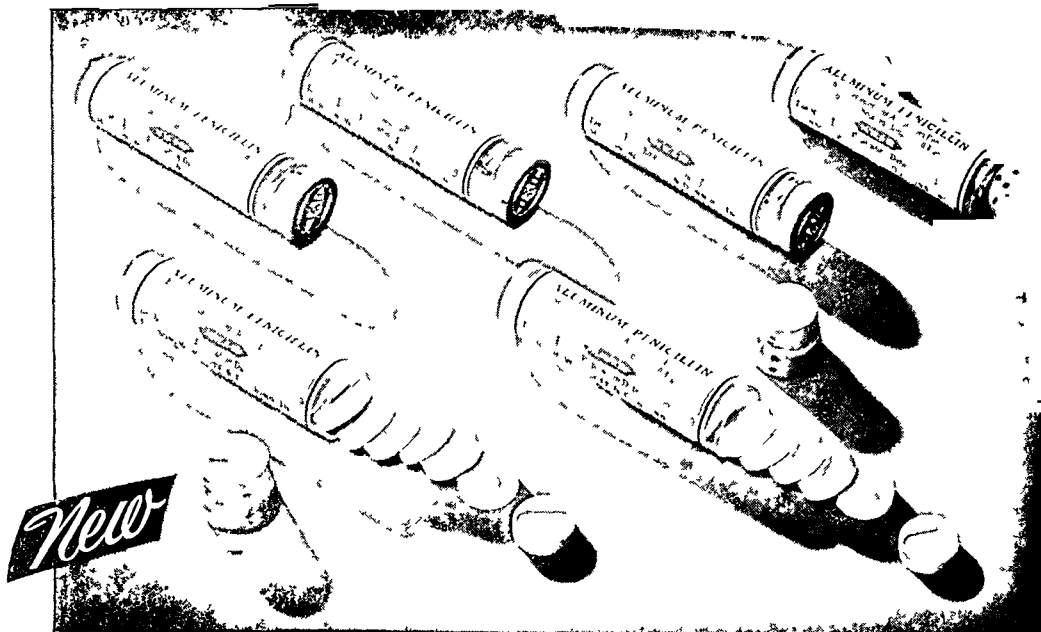


JOSEPH S. BATES
President

Ciba

PHARMACEUTICAL PRODUCTS, INC., SUMMIT, NEW JERSEY

PERANDREN—T. M. Reg. U. S. Pat. Off. 2/1509



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Aluminum Penicillin Oral Tablets are clinically effective in the treatment of penicillin susceptible infections.

Containing the almost insoluble trivalent aluminum salt (not a mixture), they provide for maximum utilization of the dose administered.

Low solubility of Aluminum Penicillin renders it much less liable to inactivation in the stomach. Destruction in the intestinal tract is inhibited by the addition of sodium benzoate. Slow conversion to a readily absorbed form in the more alkaline conditions of the intestinal tract enhances clinical effectiveness.

Aluminum Penicillin is not toxic in doses far exceeding those used therapeutically and does not cause gastric disturbance.

Detailed information will be sent to druggists on request.

Supplied in vials of twelve tablets each containing Aluminum Penicillin, 50,000 units, and sodium benzoate, 0.3 gram.

* Patent applied for



Now Council Accepted

Oral Tablets

HYNSON, WESTCOTT & DUNNING, INC.



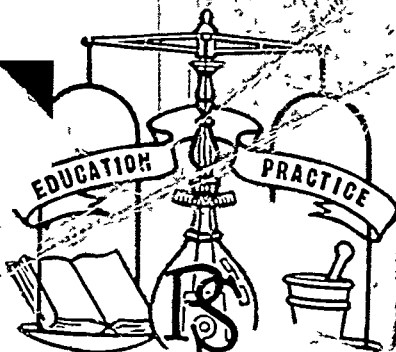
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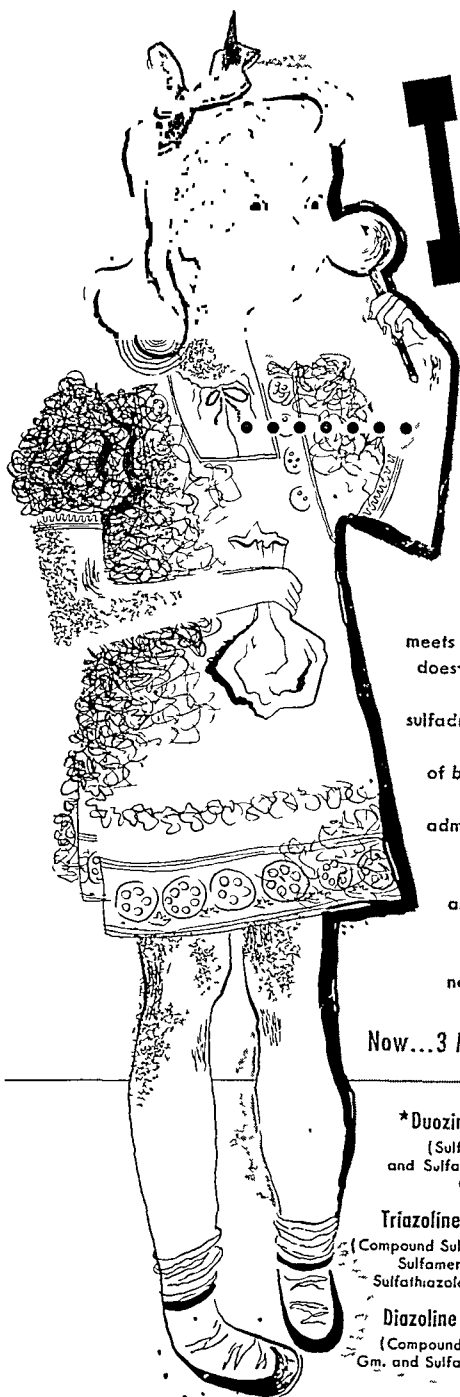
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FINDINGS AND
RECOMMENDATIONS
of the
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1948



*Survey
Findings
Analyzed*





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New DUOZINE* Dulcet® Tablets
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Sulfamerazine 0.1 Gm. and
Sulfathiazole 0.1 Gm., Abbott)

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*Sulfadiazine Dulcet Tablets
0.15 Gm. and 0.3 Gm.

*Sulfamerazine Dulcet Tablets
0.3 Gm.

Sulfathiazole Dulcet Tablets
0.3 Gm.

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*Trade Mark *Council Accepted, AMA

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For convenience in prescribing, SOLTABS has been adopted as a new line name for C.S.C. Soluble Tablets including crystalline penicillin G potassium. The designation Soltabs on a penicillin prescription means that the patient is assured of receiving the finest in penicillin soluble tablets.

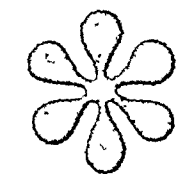
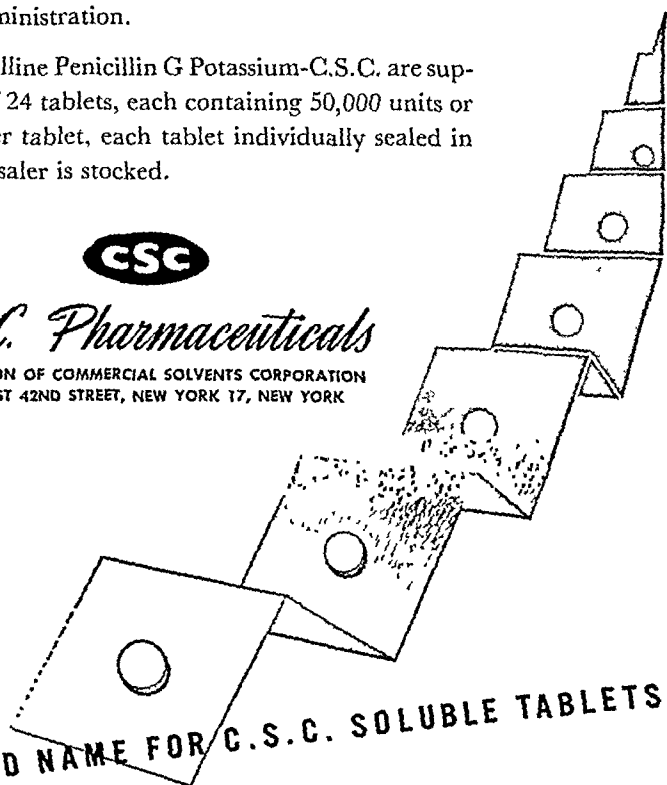
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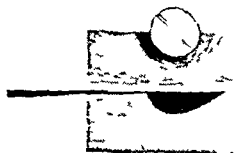
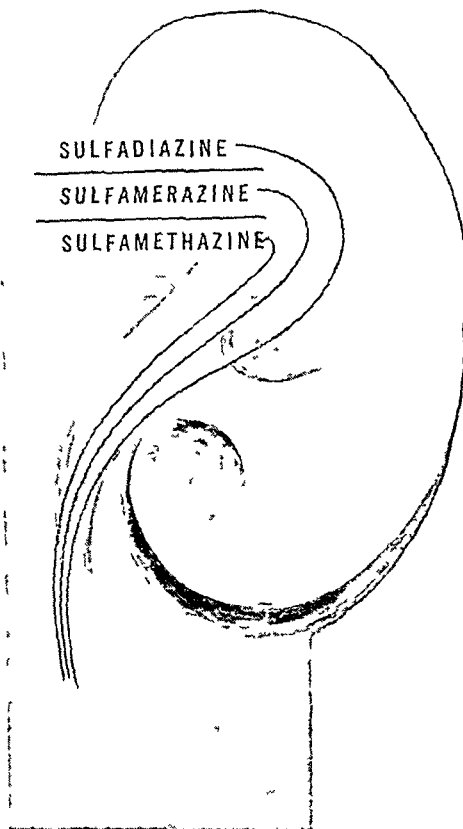
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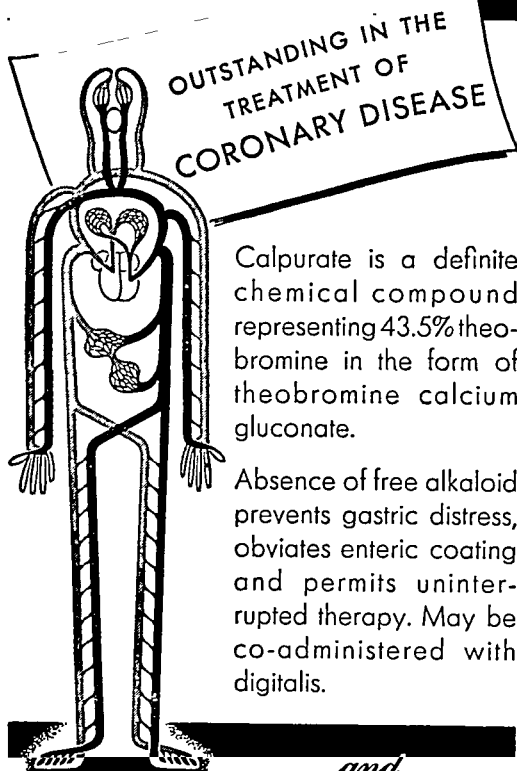


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ENTERED as second-class matter January 23, 1917, at the Post Office at Easton, Pennsylvania, under the act of March 3, 1879, as 24 times a year: *Scientific Edition* monthly on the 5th; *Practical Pharmacy Edition* monthly on the 20th. Acceptance for mailing at a special rate of postage provided for in Section 1103. Act of October 3, 1917, authorized July 10, 1918.

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Just as a great dam stores and releases water only as fast as the fertile lands below can utilize it, so does Alhydrox* adsorb antigens and release them *slowly* from tissue after injection. This gives the effect of continuous small doses.

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** Trade Mark

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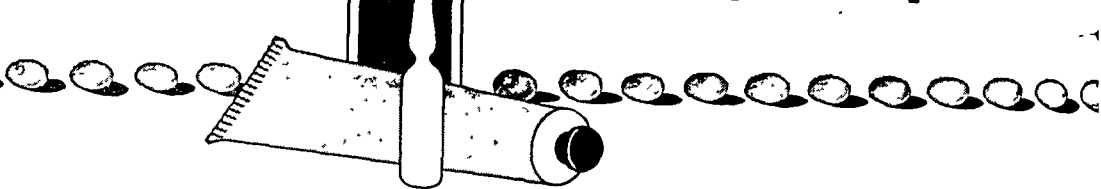
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New

prescription product



Product descriptions may be clipped and filed on three- by five-inch cards. These are also indexed for quick reference in the "Monthly Drug Index" appearing on the last page of each issue. A product is described in this column for the information of pharmacists who may be asked by physicians to stock the drug, or who may receive professional inquiries about it. A listing does not imply evaluation or recommendation by the Association, nor does omission of any product have significance concerning its merit.

ANTISTINE-PRIVINE

Description: Antistine hydrochloride (phenazoline hydrochloride) 0.5% and Privine hydrochloride (naphazoline hydrochloride) 0.025% in an isotonic aqueous solution buffered at a pH of 6.1.

Form Supplied: Bottles of 1 oz. with dropper.

Action: Antihistaminic and vasoconstrictor.

Administration: 2 to 3 drops in each nostril every 3 to 4 hours.

Source: Ciba Pharmaceutical Products, Inc., Summit, N. J.

BILOGEN

Description: Tablets each containing ox bile extract 120 mg., oxidized mixed bile acids 75 mg., deoxycholic acid 30 mg., and pancreatin 250 mg.

Form Supplied: Bottles of 100 and 1000 tablets.

Action: Choleric and digestant.

Administration: 1 or 2 tablets after meals and at bedtime.

Source: Organon Inc., Orange, N. J.

CICOLINE

Description: Syrup containing 1.25 Gm. choline dihydrogen citrate in each 5 cc.

Form Supplied: Pint and gallon bottles.

Action: Reverses fatty infiltration of the liver and prevents further hepatic cell destruction.

Administration: Orally; dosage dependent upon degree of liver involvement.

Source: Barlow-Maney Laboratories, Inc., Cedar Rapids, Iowa.

DIFUSIN

Description: Lyophilized hyaluronidase, a naturally occurring enzyme which hydrolyzes hyalin or cell-cementing substance.

Form Supplied: Packages of 3 vials, each vial containing 150 T.R.U. (turbidity reducing units) of sterile, lyophilized hyaluronidase.

Action: Increases rate of absorption of fluids given subcutaneously, including saline, saline in glucose, Ringer's solution, etc.

Administration: As directed by the physician.

Source: G. D. Searle & Co., Chicago 80, Ill.

DRODEINE

Description: Each fluidounce contains dihydrocodeinone bitartrate 10 mg., terpin hydrate microcrystals 1.5 Gm., and an aromatic. Preserved with methyl parahydroxybenzoate. Drodeine is an exempt narcotic.

Form Supplied: Pint and gallon bottles.

Action: Sedative; expectorant.

Administration: 1 teaspoonful every 3 hours.

Source: Pitman-Moore Co., Indianapolis 6, Ind.

FEROMA

Description: Capsules each containing ferrous sulfate exsiccated 0.2 Gm. and glutamic acid hydrochloride 0.3 Gm.

Form Supplied: Bottles of 100 and 1000 capsules.

Action: Secondary anemia therapy. The glutamic acid hydrochloride is intended to promote the absorption and assimilation of iron by stimulating the production of acid in the stomach.

Administration: 1 capsule 3 times daily.

Source: Sharp and Dohme, Inc., Philadelphia 1, Pa.

METHAJADE

Description: Each 30 cc. contains methadone hydrochloride 10 mg.; phenylpropanolamine hydrochloride, 0.12 Gm.; potassium citrate; diluted phosphoric acid; and alcohol 5%. Methajade is an exempt narcotic.

Form Supplied: Pint and gallon bottles.

Action: Sedative; expectorant.

(Continued on Page 584)

**physicians
are
specifying**

PENICILLIN S-R
TRADE MARK

because

PENICILLIN S-R means Soluble and Repository penicillin combined to give the special advantages of both.

also because

PENICILLIN S-R means Speedy Rise of blood penicillin levels.

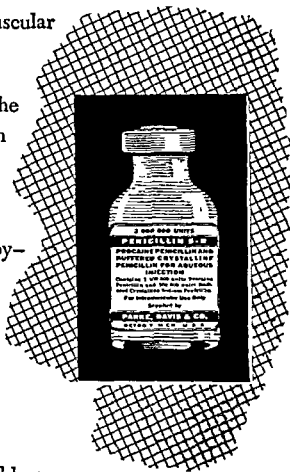
PENICILLIN S-R means Sustained Response to a 1cc. intramuscular injection for 24 hrs. or longer.

PENICILLIN S-R means both Slow and Rapid absorption from the Parke-Davis combination of procaine penicillin (controlled crystal size), 300,000 units and buffered soluble penicillin, 100,000 units.

PENICILLIN S-R means Simplified Routine in penicillin therapy—easily prepared, quickly injected, no clogged needles or syringes.

PENICILLIN S-R means Sales and Repeat sales for this outstanding development in penicillin therapy.

PENICILLIN S-R is supplied in one-dose (400,000 units), five-dose (2,000,000) and ten-dose (4,000,000) rubber-diaphragm-capped vials. When diluted according to directions, each cc. contains 300,000 units of crystalline procaine penicillin-G and 100,000 units of buffered crystalline sodium penicillin-G. The one-dose vial is also available if desired with an accompanying ampoule of Water for Injection, U.S.P.



PARKE, DAVIS & COMPANY • DETROIT 32, MICHIGAN

NEW PRESCRIPTION PRODUCTS

(Continued from Page 582)

Administration: 1 to 2 teaspoonfuls every 3 or 4 hours.

Source: Sharp & Dohme, Inc., Philadelphia 1, Pa.

PARADIONE

Description: Capsules containing 0.3 Gm. and solution containing 0.3 Gm. per cc. of paramethadione, a homolog of trimethadione (Tridione) differing only in the substitution of an ethyl for a methyl group on carbon 5.

Form Supplied: Capsules in bottles of 100 and 1000; solution in 50-cc. bottles with graduated dropper.

Action: Treatment of petit mal, myoclonic, and akinetic epilepsy. Photophobia, the most frequent reaction to Tridione, is infrequent with Paradione. Contraindicated in patients with severe renal or hepatic disorders.

Administration: As determined by the physician according to the response and to the control of side reactions.

Source: Abbott Laboratories, North Chicago, Ill.

pHISODERM with HEXACHLOROPHENE 3%

Description: 3% of hexachlorophene [bis(2-hydroxy-3,5,6-trichlorophenyl)methane] incorporated in pHisoderm.

Form Supplied: Pints, gallons, and 3-oz. refillable hand dispensers.

Action: Anti-infective; detergent.

Administration: Topically; preoperative scrub.

Source: Winthrop-Stearns Inc., 170 Varick St., New York 13, N. Y.

SUB-Q-PAK

Description: Disposable hyperdermoclysis unit for the subcutaneous administration of fluids.

Form Supplied: Each unit consists of a dispensing cap, air filter, Murphy drip, plastic tubing, with "Y" assembly, two pinch clamps, and needle adapters with protective covering. Packed sterile and pre-assembled. Boxes of 20 units.

Source: Abbott Laboratories, North Chicago, Ill.

SULFAMYLON HYDROCHLORIDE

Description: 1% buffered aqueous solution of 4-aminomethylbenzene sulfonamide hydrochloride with aromatics.

Form Supplied: Bottles of 1 and 8 fl. oz.

Action: Treatment of upper respiratory infections.

Administration: Instillation, irrigation, atomizer spray, or wet dressings.

Source: Winthrop-Stearns Inc., 170 Varick St., New York, 13, N. Y.

SULFAMYLON with STREPTOMYCIN

Description: 5% solution of Sulfamylon hydrochloride (4-aminomethylbenzene sulfonamide hydrochloride) and Streptomycin sulfate 20 mg

Form Supplied: Combination package of Sulfamylon hydrochloride 5% solution, 100 cc., and Streptomycin sulfate 20 mg.

Action: Treatment of wound infections.

Administration: Topically.

Source: Winthrop-Stearns Inc., 170 Varick St., New York 13, N. Y.

THERAGRAN

The new trade-marked name Theragran has been adopted by E. R. Squibb and Sons for the multiple vitamin preparation formerly known as Therapeutic Formula Vitamin Capsules.

TRICOMBISUL

Description: Tablets containing 166 mg. each of sulfacetamide, sulfadiazine, and sulfamerazine.

Form Supplied: Bottles containing 100 and 1000 tablets.

Action: Treatment of infections amenable to sulfonamides.

Administration: As determined by the physician.

Source: Schering Corp., Bloomfield, N. J.

VIR-I-TOL

Description: Tablets containing mannitol hexanitrate 30 mg., phenobarbital 15 mg., rutin 20 mg., veratrum viride 100 mg.

Form Supplied: Bottles of 100 and 1000 tablets.

Action: Treatment of hypertension.

Administration: 3 to 6 tablets a day, depending upon the patient's response.

Source: Barlow-Maney Laboratories, Inc., Cedar Rapids, Iowa.

Apparatus and Equipment

Ames Selftester

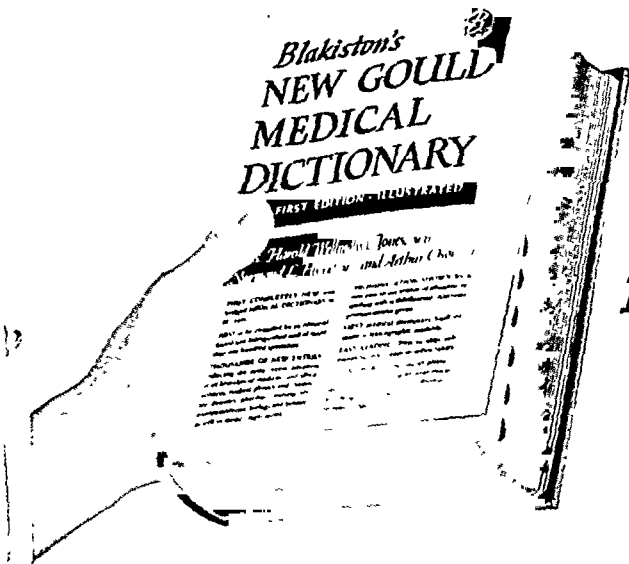
A kit for detection of sugar in urine as a home test performed by the public. Consists of two reagent tablets, one dropper, one test tube and directions for use in each kit. **Manufacturer:** Ames Co., Elkhart, Ind.

Spencer Microscopes

A new series of microscopes incorporating many new features for use by industrial laboratory and research workers, physicians, students and others needing a precision microscope. **Manufacturer:** American Optical Co., Scientific Instrument Division, Buffalo, N. Y.

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With Aldiazol-M, adequate sulfonamide dosage may be administered with utmost therapeutic advantage and with minimal danger of crystalluria. Providing both sulfadiazine and sulfamerazine in equal amounts, it permits greater total urinary sulfonamide saturation. Thus the risk of crystal precipitation is reduced, even when large amounts are given.

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Aldiazol-M is indicated in many infectious diseases which respond to sulfadiazine and sulfamerazine. Pleasantly flavored, it is especially useful in pediatric practice.

Each teaspoonful (5 cc.) of
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Sulfadiazine
(microcrystalline). 0.25 Gm.
Sulfamerazine
(microcrystalline).. 0.25 Gm.
Sodium Citrate..... 1.0 Gm.

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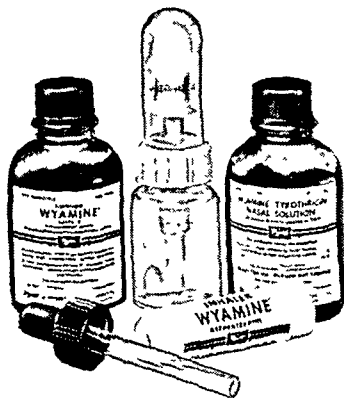


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The road to relief of nasal congestion
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This month alone . . . 3 out of 4 families in your trading area will be seeking relief from acute or chronic rhinitis or sinusitis. Four opportunities for clinching this profitable business are offered in

The NEW WYAMINE[®] Line



● THE NEW, NONSTIMULATING VASOCONSTRICTOR

Wyamine, either as the volatile liquid, or the water-soluble sulfate, is an effective new vasoconstrictor, possessing several important advantages. Wyamine produces a local vasoconstriction approximately equal to that of ephedrine, but its action is seldom attended by returgescence, or by nervousness, excitability or insomnia.

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WYAMINE-PENICILLIN CAPSULES (PENICILLIN WITH VASOCONSTRICTOR)

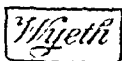
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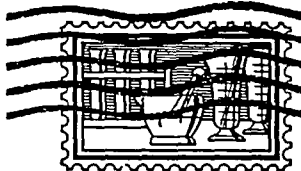
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These solutions may be used either with dropper or Jetomizer[®].

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Letters:

Lauds Promotion Materials

Sirs:

It is really a pleasure to receive just such a listing of valuable material as you have sent me. I personally am at a loss in selecting the proper material because it is all so worth while. However, a group of independent pharmacists, including myself, are running a series of spot announcements in conjunction with a five-minute news summary on Radio Station WROV (Roanoke, Va.). This program conveys to the public that our stores are owned and operated by pharmacists.

Roanoke, Va.

ALDEN S. HANKLA

Appreciation

Sirs:

As a June Pharmacy Graduate, I wish to thank you and the senior members of "our" organization for the favor of granting me active membership for the balance of my associate membership period. The application for active membership is enclosed.

Des Moines, Iowa

BASIL P. KETCHAM

We welcome Mr. Ketcham and other A. Ph. A. student branch members who have graduated and are now transferred to active membership.—THE EDITOR

Important to Practicing Pharmacist

Sirs:

I take this opportunity to express my satisfaction with THE JOURNAL, which I have been reading each month since 1946. In spite of the fact that much space is absorbed by matters of only local American interest, THE JOURNAL keeps me quite well informed about new drugs and preparations, as well as about the progress of science in general. This information is very important to the practicing pharmacist as it enables him to advise the physician professionally.

Haifa, Israel

DR. H. I. EHLMANN

A "Must" for Student Members

Sirs:

Enclosed you will find a money order for the necessary amount for an active membership in the AMERICAN PHARMACEUTICAL ASSOCIATION.

Since I was a member of the Student Branch of the A. Ph. A. at the University of Wisconsin, I know it is a "must" to obtain an active membership in the organization. Now that I have completed my education and have become a registered pharmacist, I know this is necessary in order to keep abreast with all the advances continually being made in pharmacy.

Milwaukee, Wisc.

DELL A. OLSZEWSKI

Praises Journals

Sirs:

As a new, and a foreign, subscriber to your JOURNAL, may I say how absorbingly interesting I have found those copies already received. Your domestic problems appear to be not unsimilar to those experienced here in Britain. The standard of papers published in the *Scientific Edition* is very high. I feel a detailed study of your JOURNALS will result in a positive gain to me.

Cambridge, England

A. S. THOM

Pharmacy in Israel

Sirs:

You might be interested to know that pharmaceutical life is steadily reorganized by the authorities, imposing better control on drug mercantilism and elevating the professional standards to a high standing. May I add that graduate pharmacists in the Israel Army Medical Service are granted commissions as second lieutenants with additional duty allowance. The pharmaceutical units in the army are steadily developing with the receipt of better tools, instruments and drugs, contributed to a great extent by the (United) States. I am sure that pharmacy as such will take its share in the present rehabilitation of the country.

Let me extend again my best wishes to the ASSOCIATION and trusting to enjoy even from afar its activities for the profession, I beg to be

Tel-Aviv, Israel

EFRAIM MENCZEL

Record of Achievement

Sirs:

Please add our name to the long list of pharmacist-participating in the distribution of information concerning public health. I am sorry to be so tardy in my application for this service. We do, however, distribute pamphlets from our own State Board of Health.

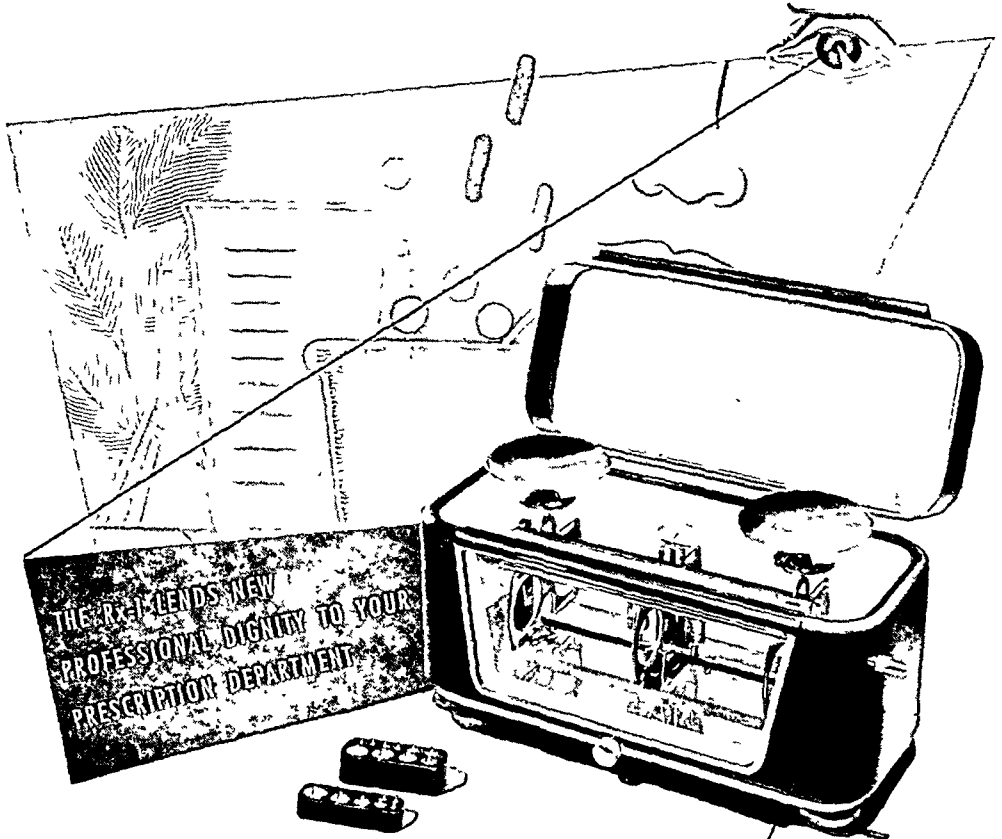
I would like to congratulate the ASSOCIATION on its record of achievement, and particularly for spearheading so many projects for professional promotion in the last 10 years.

And from the Pharmaceutical Survey come benefits to the personnel of pharmacy and the public, which are so long overdue.

Hazel Park, Mich.

JOHN VILS

THE MOST ATTENTION-COMPELLING PRESCRIPTION BALANCE EVER



Here, at last, is a subtle yet effective way to 'display' the pharmacist's skill...that skill your customers must trust, but can sense only indirectly.

You'll find the Rx-1 is new confidence insurance, ready-made for an 'open' department. Who among your customers could fail to notice such equipment...and be impressed?

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You can help set the stage for increased prescription business at satisfactory prescription prices, with the Rx-1.

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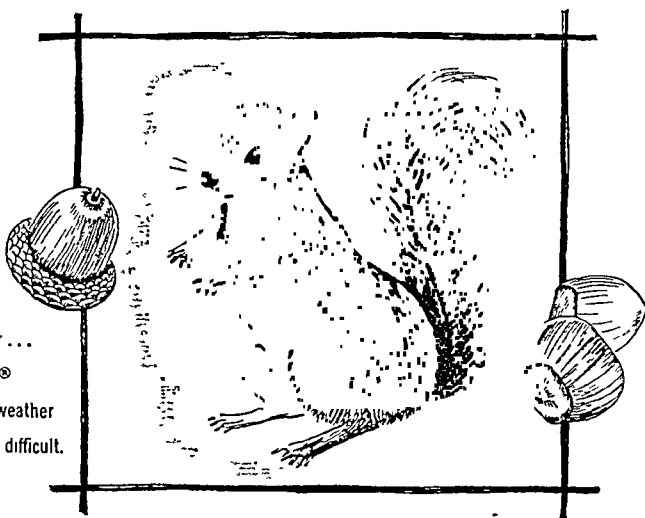
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Stock up on CREAMALIN®
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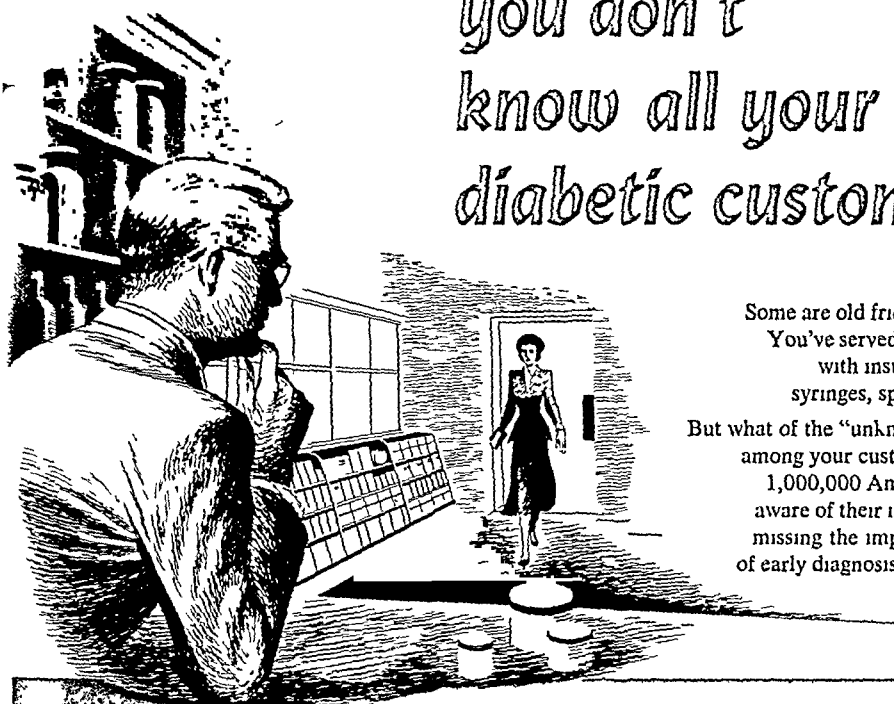
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But what of the "unknown diabetics"
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Each *Selftester* contains a test tube, medicine drop-
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concise instructions. It is an over-the-counter item
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Your Cost	"	2 80	"	23½
Your Profit	"	\$1 88	"	\$ 15½

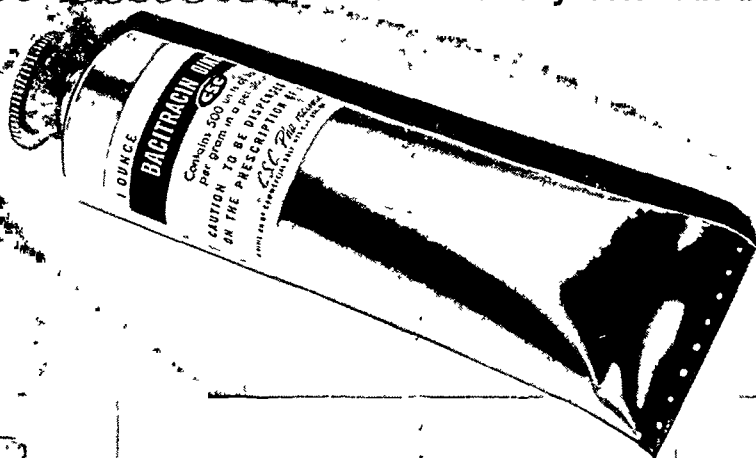
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Bacitracin Nasal. In 15 cc bottles. Provides 250 U of bacitracin per cc and 0.25% desoxyephedrine



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A Dosage Form for Virtually Every Topical Need

The topical antibiotic properties of bacitracin can be employed to their fullest therapeutic advantage by the use of the dosage forms shown.

Bacitracin Ointment is widely used in the local management of infected skin lesions. Bacitracin Ophthalmic Ointment is advantageously employed in many infectious lesions of the eyes.

In the topical management of carbuncles, large furuncles and infected wounds, bacitracin in solution, injected directly into the base of the lesion, leads to prompt remission and usually obviates the need for surgery.

Bacitracin Troches are valuable in the management of pharyngeal and oral infections due to bacitracin-sensitive organisms, while Bacitracin-Nasal (with vasoconstrictor) has been found of benefit in acute and chronic sinusitis.

Bacitracin Oral Tablets, the newest dosage form, lead to outstanding results in amebiasis. Each tablet contains 10,000 units of bacitracin. These tablets exert a profound local bacitracin influence within the intestinal tract, and little or no bacitracin is absorbed into the circulation.

Each of these bacitracin preparations is characterized by its low index of allergenicity, an extremely important factor in topical therapy.



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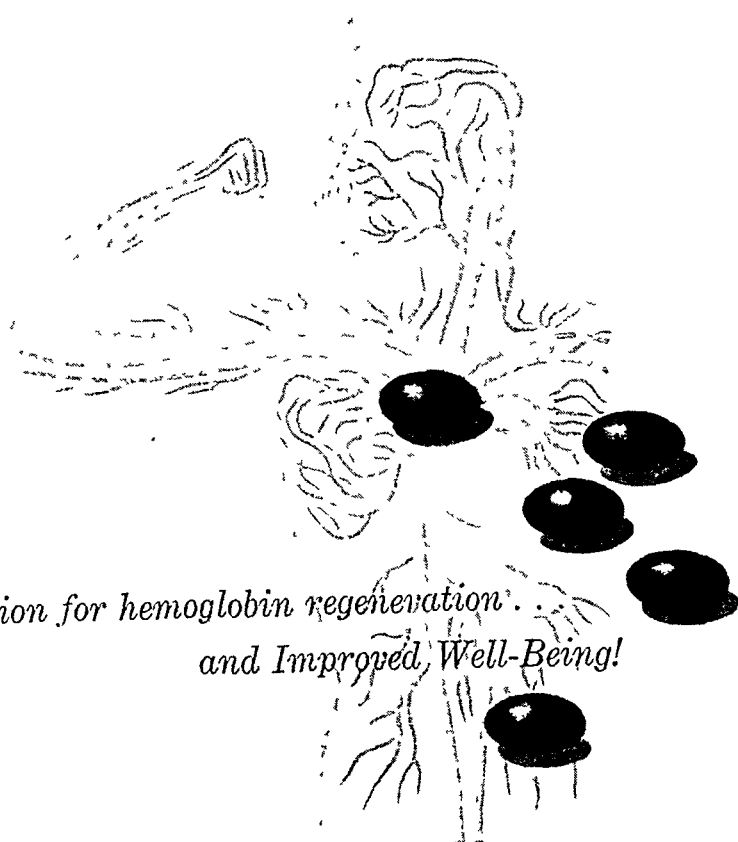


Bacitracin Troches. 1,000 units each, in bottles of 25



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'WARNER'

HEMOSULES* 'Warner' contains the several hematopoietic factors of established importance in blood regeneration for obtaining optimal results in hypochromic anemias.

HEMOSULES* 'Warner' are high-potency, vitamin-rich capsules which also contain liver concentrate and highly absorbable ferrous sulfate.

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Ferrous sulphate, Dried U S P . . .	162.0 mg (2 5 grs)
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Folic acid**	0.75 mg
Thiamine hydrochloride (vitamin B ₁) . . .	1 0 mg
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Pyridoxine hydrochloride (vitamin B ₆)** . .	0 5 mg
Calcium pantothenate**	0 5 mg
Ascorbic acid (vitamin C)	15 0 mg

HEMOSULES* are indicated in all secondary anemias due to or accompanying impaired absorption or assimilation, nutritive inadequacy, increased requirements in obstetrical patients, gynecological and gastroenterological disorders, surgical operations, and infectious diseases.

HEMOSULES* 'Warner'—hematinic capsules—are available in bottles of 96, 250 and 1,000 at all leading pharmacists.

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New York St. Louis

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**The need for pyridoxine hydrochloride, calcium pantothenate and folic acid in human nutrition has not been established

†The minimum daily requirement for niacinamide has not been established.

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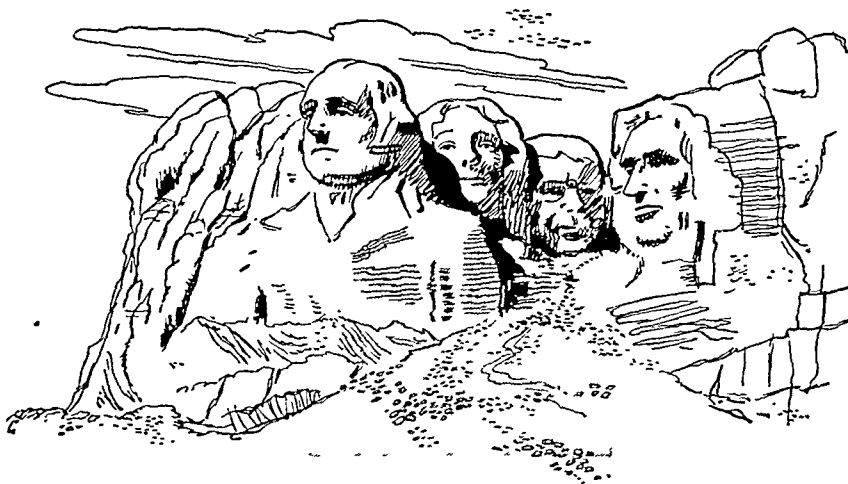
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Journal of

AMERICAN PHARMACEUTICAL ASSOCIATION



OL. X. NO. 10
CONSECUTIVE NO. 19

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OCTOBER, 1949

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STRAIGHT FROM HEADQUARTERS



By **ROBERT P. FISCHER**, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

Responsibility Well Met

THERE are obvious reasons why the production and distribution of drugs and medicines should be continuously under the supervision of qualified professional personnel. As far as the production of drugs is concerned, the personnel includes a variety of scientists and technicians. When it comes to their distribution, the States have provided a class of professional persons who are licensed to practice pharmacy and are responsible to the state for the proper discharge of their functions.

As soon as the distribution of drugs is placed in the hands of persons who are not licensed pharmacists or working under the immediate personal supervision of licensed pharmacists, the public loses the protection which the State has endeavored to guarantee.

There is, however, another excellent reason for limiting distribution of drugs and medicines to registered pharmacists. Occasionally errors creep into the production or packaging of drugs even though factory and distribution control are maintained at a high level of protection to the ultimate consumer.

These errors are unfortunate, but they have occurred. Furthermore, despite the elaborate precautions against having new drugs placed on the market before their safety is established, there are instances where the danger of possible unfavorable side reactions have not been anticipated. These unfavorable reactions sometimes develop after extensive use because they affect relatively few people or because the insidious nature of the unfavorable action of an otherwise valuable drug may not become apparent for a long period.

When evidence of possible unfavorable or dangerous side reactions becomes available, it may become necessary to withdraw the drug from the market immediately in order to prevent possible loss of life or serious injury. In such instances, the professional control of drug distribution is indispensable.

The names and addresses of hospitals are known; the names and addresses of retail pharmacies are known; the names and addresses of licensed physicians and licensed pharmacists are known. Through national, State, and local pharmaceutical associations, and through State boards of medicine and pharmacy, it is possible to alert the entire medical and pharmaceutical professions and the owners or administrators of hospitals, retail pharmacies, wholesale drug companies, and other legitimate outlets for professional products.

A case in point was the recent withdrawal of Presidon from all distribution sources in a remarkably short period.

When the medical department of Hoffmann-LaRoche, Inc., recently learned that a few hypersensitive patients had apparently developed symptoms of agranulocytosis while under treatment with Presidon (a Roche sedative-hypnotic), the manufacturer voluntarily undertook to protect patients, physicians, pharmacists, hospitals, and others concerned in the distribution of Presidon by asking all concerned to stop the sale and dispensing of the drug and return all stocks of tablets and powder, whether opened or unopened, directly to the headquarters of the Company. It assured pharmacists of an adjustment on all of the returned drug, plus reimbursement for postage. It supplied information directly to

hospitals, physicians, and pharmacists as to the reason for the withdrawal of the drug from general distribution. Accordingly, complete withdrawal of the drug from the market and from further use was accomplished promptly and efficiently. This could not have been done if the channels of distribution had not been established and known.

It is necessary, continuously, to impress the public with the fact that drugs and medicines are potentially dangerous agents whose distribution should remain always in the hands of qualified, professionally competent, and licensed personnel. The safeguards which such distribution provides far outweigh the slight advantage of any monopoly which may accrue to the distributors and no sensible individual will question the public health value of this procedure.

Hoffmann-LaRoche, Inc., and other manufacturers have demonstrated that they are ready to assume the responsibility which goes with the practice of medicine and pharmacy. This is in line with the highest conception of the sanctity of human life which is expected of those engaged in the practice of medicine and related arts and sciences. It is what the American public has come to expect from all segments of the drug industry and, while regretting the unfortunate incident which necessitated such action, we congratulate Hoffmann-LaRoche on the splendid manner in which they met their responsibility in this instance.

Two Presidents From Minnesota

BY AN odd coincidence the president-elect of the AMERICAN PHARMACEUTICAL ASSOCIATION and the president just elected by the National Association of Retail Druggists are both from the State of Minnesota and, although they are citizens of the rival "Twin Cities" of the great Northwest, both have made their mark by laying emphasis on pharmaceutical service in the professional field. Henry Gregg of Minneapolis, who will be installed as president of the AMERICAN PHARMACEUTICAL ASSOCIATION at the Atlantic City convention in May, 1950 has had wide experience in pharmaceutical organization work and represents the practicing pharmacists of the United States in the best tradition of that group.

As president of the Northwestern Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, as chairman of the House of Delegates of the A. PH. A., and as a member and vice-chairman of the Council, he has served American pharmacy and the AMERICAN PHARMACEUTICAL ASSOCIATION faithfully and well. We can look forward to valuable accomplishments during his term of office. However, it is somewhat early to speak of this since he does not take office for another seven months.

Frank W. Moudry, of St. Paul, was unanimously elected president of the N. A. R. D. at the New York convention last month. This recognition on the part of his fellow pharmacists follows a long distinguished service to the N. A. R. D. and to American pharmacy in general. He has distinguished himself as a pharmacist and as a member and secretary of one of the most progressive State boards of pharmacy in the United States. He has served as president of the National Association of Boards of Pharmacy and he was one of the members of the Advisory Committee of the Pharmaceutical Survey. In these capacities he contributed much from the viewpoint of the practicing pharmacist and pharmacy law enforcement officer. One of Mr. Moudry's distinguishing characteristics is his willingness to listen to the point of view of others and to predicate his official actions on as much factual information as can be made available. His leadership in the affairs of the National Association of Retail Druggists has been felt for a number of years while he presided over the executive committee of that organization. He gave whole-hearted support to the joint meetings of the N. A. R. D. Executive Committee and the Council of the A. PH. A. which have been held annually for a number of years and, in his capacity of chairman of the N. A. R. D. Executive Committee, he has presided over these meetings on several occasions. As a matter of fact, Mr. Moudry has been a very active member of the AMERICAN PHARMACEUTICAL ASSOCIATION as well as the N. A. R. D. and is, therefore, cognizant of the importance of the respective activities of these organizations. He can be expected to give a brand of leadership to the affairs of the N. A. R. D. in the coming year which will redound to the credit of his Association and to retail pharmacy in general.

PREFERRED PRESCRIPTION SOURCES

AN EVALUATION BY THE PATIENT

*By L. C. WAGNER and H. W. YOUNGKEN, JR.**

AS modern pharmacy becomes increasingly active in its public health role, the community which it serves obviously strives to understand the purposes of the profession and the nature of its activities. Among those activities inherent to every type of pharmacy is its prescription service. Although this service might be considered the unit about which the professional activities of pharmacy revolve, the very nature of non-professional accessory activities which many community pharmacies conduct raises the issue—to what extent do such activities conceal the significance of the prescription service in the mind of the patient? It was therefore considered of interest to study the thinking of a convenient cross-sectional area of a portion of an average city, Seattle, Wash., and to obtain data from family contacts which would reveal factors that are important to the patient in his selection of a pharmacy for prescription compounding.

In effecting this study the several types of pharmacies of the area were arbitrarily divided into two types. Groups established were: (1) "Prescription Pharmacies" and (2) "Retail Drugstores." The distinguishing factor in this separation was based upon the extent of non-prescription activities in which stores were engaged. Further, the "Retail Drugstore" division was separated into "Independent Drugstore" and "Chain Drugstore," depending upon the ownership and control of such stores. These separations were made with full understanding of existent borderline cases. Based upon such an arbitrary grouping a comprehensive questionnaire was then formulated.

This questionnaire was organized into four parts beginning with general information which included the patient's reasons for a preference in selecting one of the above-mentioned types of pharmacies for prescription service; second, factors influencing the patient's opinions of retail drugstores and prescription pharmacies as sources of prescription compounding; third, factors influencing the patient's opinion of independent retail drugstores and chain operated stores as sources for prescription compounding; and fourth, the nature of a patient's reliance upon the pharmacist for health advice.

Interviews were made under the supervision of a marketing research specialist. It was felt that the use of non-pharmacists would minimize the possibility of influencing patient opinions. Therefore interviewers were selected from a group of non-pharmacist marketing research students. All were carefully instructed in the purposes of the study, in the distinguishing characteristics of the types of pharmacies covered, and in the most effective methods of interviewing respondents. To secure a representative cross section of families, the respondents to be interviewed were selected by employing area sampling methods as described by Heidingsfield and Blankenship.†

A total of 363 families were interviewed with the standard questionnaire within a cross-sectional area of northeast Seattle. In most instances the housewife was the interpreter of the prescription habits of the family. The results of the study reveal the following facts.

* College of Business Administration and College of Pharmacy, respectively, University of Washington, Seattle, Wash. Presented before the Practical Pharmacy Section, AMERICAN PHARMACEUTICAL ASSOCIATION, JACKSONVILLE, FLA., April, 1949.

† Heidingsfield, M. S., & Blankenship, A. B., "Market and Marketing Analysis," Henry Holt & Co., New York (1947), pp. 150-157.

Part I

GENERAL INFORMATION

Under general information sought from the patient were answers to the following questions: "Have you ever had a doctor's prescription filled?" "In what type of store do you usually have prescriptions filled?" "Why do you purchase from this type of store?" "Does your doctor recommend where you should get prescriptions filled?" Out of 363 families interviewed, 354, or 97.7%, indicated that they had had a doctor's prescription filled at some time; 290, or 81.9% stated that each had had one or more prescriptions filled within the last year.

Preferred Establishments:

When asked the type of establishment in which they usually had prescriptions filled, 45.2% expressed a preference for an independent drugstore, followed by 32.2% for a prescription pharmacy, and 12.4% for a chain drugstore. The category labeled "others" in the following table applies to veteran's hospitals and armed service prescription dispensaries. No preference was expressed by 31 families, or 8.8% of the total number interviewed.

TABLE I

Type of Outlet Usually Preferred as a Source of Prescriptions

OUTLET	NUMBER	PER CENT
Independent drugstore.....	160	45.2
Prescription pharmacy.....	114	32.2
Chain drugstore.....	44	12.4
Others.....	5	1.4
No preference.....	31	8.8
Total.....	354	100.0

Reasons for Preference:

After indicating the type of pharmacy preferred, respondents were asked to state the most important factor influencing their patronage of such pharmacies. A convenience of store location was the most frequently mentioned factor. The relative importance of the various other items listed on the questionnaire, such as qualification of pharmacists, personal acquaintance, delivery service, doctor's recommendation, prices, quality of drugs, etc., varied with the type of store preferred. Convenience of location was mentioned by 70.0% of the independent store prescription buyers as the most important factor influencing their patronage, while 14.4% indicated personal acquaintance as being of primary importance. Those preferring the prescription pharmacy as a source of prescriptions emphasized other patronage motives. For example, of this group 33.3% were influenced primarily by recommendations of their doctor, whereas 23.7% were motivated by a convenience of location, and 21.0% by the belief that the prescription pharmacy had better qualified pharmacists. In regard to chain store patrons, 65.9% were influenced primarily by convenience of location, while 20.4% preferred this outlet because of a belief that they were obtaining prescriptions at lower prices. The results indicating such a comparison are shown in Table II.

Doctors' Influence on Source of Prescription Compounding:

Since it was felt that doctors' recommendations might be an important factor influencing the type of outlet from which the patient secured prescriptions, special emphasis was given to this factor. Respondents'

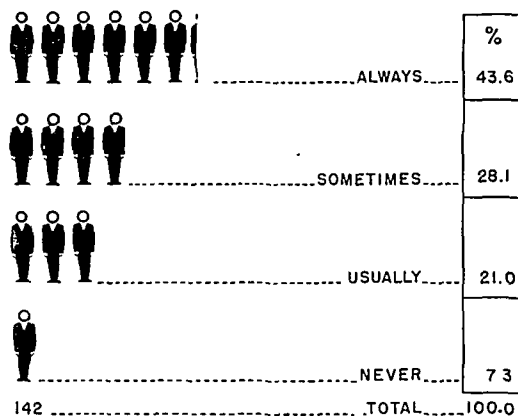
TABLE II

Primary Reason Given for Store Preference

REASON	INDEPENDENT STORE		PRESCRIPTION PHARMACY		CHAIN DRUG		TOTAL	
	NO.	%	NO.	%	NO.	%	NO.	%
Convenient location.....	112	70.0	27	23.7	29	65.9	168	52.8
Doctor's recommendation.....	8	5.0	38	33.3	1	2.3	47	14.8
Better qualified pharmacist.....	5	3.1	24	21.0	..	..	29	9.1
Personal acquaintance.....	23	14.4	3	2.6	..	..	26	8.2
Lower priced prescriptions.....	1	0.6	2	1.8	9	20.4	12	3.8
Quality of drugs.....	1	0.6	8	7.0	..	..	9	2.8
Delivery service.....	2	1.3	2	1.8	..	..	4	1.3
Others.....	8	5.0	10	8.8	5	11.4	23	7.2
Total.....	160	100.0	114	100.0	44	100.0	318	100.0

DOES PATIENT FOLLOW DOCTOR'S RECOMMENDATION?

(each symbol represents 10)



replies revealed that in 40.1% of the cases the doctor recommended where the prescription should be filled. When a recommendation was made, doctors showed a heavy preference for prescription pharmacies as indicated by Table III. The strength of this recommendation undoubtedly influences many patients and their attitudes toward the prescription pharmacy. It, however, does not appear to influence a larger majority of patients who select other types of pharmacies for their convenience of location.

TABLE III

Type of Outlet Recommended by Doctor

OUTLET	NUMBER	PER CENT
Prescription pharmacy.....	107	75.4
Independent drugstore.....	25	17.6
Chain drugstore.....	5	3.5
Others.....	5	3.5
Total.....	142	100.0

When respondents were asked whether they followed the doctor's recommendation, a majority, or 64.6%, indicated that they always or usually accepted his advice. As shown by Table IV, a few appeared to disregard consistently his recommendation.

TABLE IV

Does Patient Follow Doctor's Recommendation?

	NUMBER	PER CENT
Always.....	62	43.6
Usually.....	30	21.0
Sometimes.....	40	28.1
Never.....	10	7.3
Total.....	142	100.0

Some of the voluntary comments made by patients in regard to doctors' recommenda-

tions are of interest. A number of those interviewed indicated their doctor leaves them no choice as he or the nurse telephones the prescription to a recommended pharmacy. A few voiced the belief that the physician receives a monetary "rebate" from the pharmacist who is recommended. The nature of such exchanges was not pressed.

Part II

PATIENT OPINIONS: Retail Drugstore vs. Prescription Pharmacy

Qualifications of Pharmacists:

In order to explore further the respondents' evaluations of drugstores as compared with prescription pharmacies as a source of prescription compounding, each individual was asked to evaluate the two types of outlets as to qualifications of pharmacists, prices charged, and quality of drugs carried. Regarding the relative qualifications of pharmacists employed in retail drugstores as compared with prescription pharmacies, only 19.5% held an opinion that a difference in qualifications existed. However, of this small group who expressed such an opinion, 91.6% felt that prescription pharmacies had the better qualified pharmacists. It is significant that the majority felt that there was either no difference or "didn't know." Of the smaller number who answered in the affirmative, 91.6% gave the prescription pharmacy credit for better qualified pharmacists. Table V indicates the nature of this thinking.

TABLE V

Is there any difference in the qualifications of pharmacists employed in retail drugstores as compared with prescription pharmacies?

	NUMBER	PER CENT
Yes.....	71	19.5
No.....	184	50.7
Don't know.....	108	29.8
Total.....	363	100.0

Type with Better Qualified Pharmacists

	NUMBER	PER CENT
Prescription pharmacy.....	65	91.6
Retail drugstore.....	6	8.4
Total.....	71	100.0

Prices Charged:

More patients had definite opinions regarding the relative prices charged on prescriptions by retail drugstores as compared with prescription pharmacies. A total of

38.3% held the opinion that a price differential existed. Of those having a definite opinion, 83.5% felt that prices charged by prescription pharmacies were higher than others. Table VI summarizes these opinions.

TABLE VI

Do Prescription Prices Vary between Prescription Pharmacies and Retail Drugstores?

	NUMBER	PER CENT
Yes.....	139	38.3
No.....	90	24.8
Don't know.....	134	36.9
Total.....	363	100.0

Type Charging Higher Price

	NUMBER	PER CENT
Prescription pharmacy.....	116	83.5
Retail drugstore.....	23	16.5
Total.....	139	100.0

Quality of Drugs:

Relatively few individuals held the opinion that differences in the quality of drugs carried existed between the two types of outlets. Only 16.0% of those questioned felt that drug quality differed. Of those having a positive opinion, a very decided majority, 94.8%, felt that prescription pharmacies had better drugs. Regarding the nature of this difference in quality, 45.6% attributed it to greater freshness; 17.7% to better brands carried; and 36.7% to greater accuracy of compounding. Many of the respondents attributed quality differences to more than one of the listed factors. (See Table VII.)

TABLE VII

Do Quality Differences Exist between Prescription Pharmacies and Retail Drugstores?

	NUMBER	PER CENT
Yes.....	58	16.0
No.....	183	50.4
Don't know.....	122	33.6
Total.....	363	100.0

Outlet Having Better Quality

	NUMBER	PER CENT
Prescription pharmacy.....	55	94.8
Retail drugstore.....	3	5.2
Total.....	58	100.0

Factors Influencing Quality Differences

	NUMBER	PER CENT
Freshness.....	36	45.6
Brand carried.....	14	17.7
Accuracy of filling.....	29	36.7
Total.....	79	100.0

Part III

PATIENT OPINIONS: Independents vs. Chains

Qualifications of Pharmacists:

In appraising the patient's opinions relative to a comparison of independent drugstores with chain drugstores, patients were asked to evaluate these pharmacies as to qualifications of pharmacists, prices charged on prescriptions, and quality of drugs carried. Again, only a small group, 16.5%, expressed the opinion that differences in the qualifications of pharmacists existed between independent and chain stores. Of those having an opinion on this question, 82.4% felt that the independent drugstore has better qualified pharmacists. This is shown in Table VIII.

TABLE VIII

Is there any difference in the qualifications of pharmacists employed in independent retail drugstores as compared with chain stores?

	NUMBER	PER CENT
Yes.....	58	16.5
No.....	197	54.3
Don't know.....	108	29.2
Total.....	363	100.0

Type with Better Qualified Pharmacists

	NUMBER	PER CENT
Independent.....	48	82.4
Chain.....	10	17.6
Total.....	58	100.0

Prices Charged:

Varying opinions regarding the relative prices charged on prescriptions by independent and chain stores were held by a large percentage of respondents; 45.4% felt that a price differential existed between the two types of stores. Of these having a positive opinion, 84.3% felt that the prices charged on prescriptions by independent stores were higher than chain store prices. It is significant that a large percentage of respondents feel that prescription pharmacies and independent stores charge higher prices than chain stores. This is shown in Table IX on Page 602.

Quality of Drugs:

Relatively few of the respondents, 12.4%, felt that independent stores and chains differed in the quality of drugs carried. Of

TABLE IX

Do Prescription Prices Vary between Independent and Chain Stores?

	NUMBER	PER CENT
Yes.....	165	45.4
No.....	88	24.3
Don't know.....	110	30.3

Total..... 363 100.0

Type Charging Higher Price

	NUMBER	PER CENT
Independent.....	139	84.3
Chain.....	26	15.7

Total..... 165 100.0

those expressing an opinion that quality differences did exist, 75.7% felt that independent stores had superior drugs. Regarding the nature of this difference in quality, those holding the opinion that independent stores had better quality drugs attributed it to differences in brands carried and accuracy of compounding. The smaller group holding that chains had better quality drugs attributed it to greater freshness. A substantially large majority, 87.6%, either felt that no difference in quality existed or replied they "didn't know." (See Table X below.)

TABLE X

Do Quality Differences Exist in Drugs Dispensed by Independent and Chain Stores?

	NUMBER	PER CENT
Yes.....	45	12.4
No.....	195	53.7
Don't know.....	123	33.9

Total..... 363 100.0

Outlet Having Better Quality

	NUMBER	PER CENT
Independent.....	34	75.7
Chain.....	11	24.3

Total..... 45 100.0

Reasons Why Independent Stores Have Better Quality Drugs

	NUMBER	PER CENT
Accuracy of filling.....	16	40
Brand carried.....	14	35
Freshness.....	10	25

Total..... 40 100

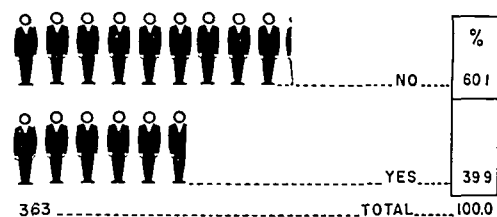
Reasons Why Chain Stores Have Better Quality Drugs

	NUMBER	PER CENT
Accuracy of filling.....	1	8.3
Brand carried.....	1	8.3
Freshness.....	10	83.4

Total..... 12 100.0

DO YOU ASK THE PHARMACIST FOR HEALTH ADVICE?

(each symbol represents 25)



Part IV

PHARMACIST AS A SOURCE OF HEALTH ADVICE

When asked whether they inquired of a pharmacist health advice as distinguished from advice on how to use a doctor's prescription, 39.9% replied in the affirmative. Of those asking the pharmacist for advice, the majority indicated that they occasionally or usually relied on the pharmacist's recommendation. In commenting on this subject a large number of the respondents revealed that they asked the pharmacist for information concerning minor ailments only. It is significant that approximately 40% of patients using prescriptions request further advice from the pharmacist. It indicates that the pharmacist should be well trained in health factors, and, because many persons apparently rely upon his help, he should be extremely cautious in the type of medical advice that he furnishes. (See Table XI.)

TABLE XI

Do You Ask the Pharmacist for Health Advice?

	NUMBER	PER CENT
Yes.....	145	39.9
No.....	218	60.1

Total..... 363 100.0

Do You Rely on His Advice?

	NUMBER	PER CENT
Always.....	27	18.7
Usually.....	40	28.3
Occasionally.....	77	52.4
Never.....	1	.6

Total..... 145 100.0

CONCLUSIONS

In the evaluation of sources of prescription compounding a large majority of patients place considerably more over-all value upon independent drugstores and prescription pharmacies than upon chain drugstores.

The majority assign the factor of convenience as most important in their actual selection of a source for prescription service.

Within the local Seattle area studied, physicians' recommendations, when given, were decidedly in favor of the prescription pharmacy as the best source. This recommendation influences greatly those who patronized prescription pharmacies.

A large majority of patients feel that there is no difference in the qualifications of pharmacists in the three types of pharmacies—*independent, chain, and prescription*—or are not aware of any differences if they do exist.

A relatively small number of patients feel that differences in drug quality exist among pharmacies. Those who did express such an opinion in the affirmative ranked the pre-

scription pharmacy highest from the point of view of "freshness" of drugs and accuracy of compounding.

There is evidence that a large percentage of patients feel a price difference exists among the three types of pharmacies. However, such an evaluation appears not to be significant in influencing the source of prescription compounding. The small minority influenced by prices usually favor the chain pharmacies.

It is interesting to note that approximately 40% of doctors' patients in the area ask pharmacists for health and medical advice. Practically all of these persons relied upon this advice in some degree. In view of this factor, the pharmacist should be extremely cautious in the nature of health advice that he renders.



Fifth Institute on Hospital Pharmacy

IN COOPERATION with the American Hospital Association, the AMERICAN PHARMACEUTICAL ASSOCIATION and the American Society of Hospital Pharmacists were co-sponsors of the Fifth Institute on Hospital Pharmacy which was held on the University of Chicago campus during the week of August 29. This was the third meeting of this type in which the A. P. H. A. and the A. S. H. P. cooperated this year, the others having been held earlier in Berkeley, Calif., and St. Louis, Mo.

In the absence of Dr. Robert P. Fischelis, Secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, George Archambault of the U. S. Public Health Service in Washington presented a message from Dr. Fischelis on behalf of the A. P. H. A. The message referred to the pharmacist's responsibilities in the hospital and the interest A. P. H. A. has in hospital pharmacy. "To the extent of its resources," Dr. Fischelis said, "the ASSOCIATION intends to continue to support the advancement of pharmacy on all of the frontiers of medical service. It hopes that the hospital pharmacists, who are perhaps closer to the practice of medicine than any other pharmaceutical group, will rise to the responsibilities which their environment presents. It hopes also that hospital administrators and other managing officials, as well as the medical profession, will recognize the contribution which American pharmacy is making to the improvement of medical care, especially through the activities of hospital pharmacists."

Highlighting the meeting was the opening address by Dr. Otis L. Anderson, Assistant Surgeon General, Associate Chief, Bureau of Medical Services, U. S. Public Health Service, Washington,

D. C. on "Responsibility of the Hospital Pharmacist in Public Health and Preventive Medicine." He outlined the role of the pharmacist as a member of the medical team in the hospital and his responsibility in providing public health information.

Some time was devoted to therapeutic problems at which time Dr. C. Wesley Eisele, associate professor of medicine, University of Chicago, and Dr. Austin Smith, secretary, Council on Pharmacy and Chemistry of the American Medical Association, were speakers.

Another outstanding speaker at the institute was Dr. Harris Isbell, director of research, U. S. Public Health Service Hospital in Lexington, Ky., who spoke on "Manifestations and Treatment of Addiction to Narcotic and Barbiturate Drugs."

Other participants in the program included Ray Brown, superintendent, University of Chicago Clinics, Chicago; Hans S. Hansen, administrator, Grant Hospital in Chicago; Dean E. R. Serles, University of Illinois College of Pharmacy; Sophie Zimmerman, Personnel Relations Department, University of Chicago Clinics; Samuel Shkolnik, legal counsel, Illinois Pharmaceutical Association, Chicago; Dr. Leon O. Jacobson, associate professor of medicine, University of Chicago; representatives of the various government agencies, and a number of outstanding hospital pharmacists from various size and type institutions.

The meeting was attended by hospital pharmacists from 28 states and Canada coming from as far West as California and South from Florida. Of the total 121 attending the institute, 116 were practicing hospital pharmacists.

NEW LIGHT ON THE ORIGIN OF SHOW GLOBES

by **GEORGE URDANG***

THE mortar and the pestle, or peculiarly shaped drug containers, or the serpent in connection with a bowl supposed to contain a remedial potion have been used as the symbols of pharmacy throughout the ages. During the last three centuries, however, it has been the so-called "show globes" that have become the common sign of pharmacy, first in England and then in all the other "Anglo-Saxon" countries including the United States of America.

The English origin of the use of this symbol as a pharmaceutical one and the approximate time in which this use became common, is all that can be stated with some degree of certainty. Unfortunately, there is not much documentary evidence, if any, for any immediate cause for the introduction of just this symbol of pharmacy at just this time. Everything said in this respect is guesswork and can be evaluated only as to the higher or lesser degree of its probability. In other words, all we may hope for is circumstantial evidence.

Adoption from the Near East

According to C. J. S. Thompson¹ the exhibition of distinctively shaped glass vessels filled with varied colored liquids to distinguish the shops of druggists was "probably adopted from the Near East, where the open-shop front of the drug-seller was often

surrounded with glass vessels and jars, containing colored liquids or substances of bright hues."

Even if that should be true, it does not answer the question why this sign was adopted just by the English apothecaries and not by their French and Spanish colleagues whose relations to the Arabic countries were much earlier and more intimate.

The Maceration Hypothesis

The same question arises as to the derivation of the "show bottles" from the maceration vessels, "often two or three gallons in size, which usually stood in the pharmacist's front window" as suggested by La Wall.² Maceration, after all, was not a process restricted to England but was practiced everywhere. Besides, the statement of La Wall does not fit the fact that the windows of the apothecary shops up to the early nineteenth century were comparatively small and the streets rather narrow. The exposure of the big maceration vessels to the sun was done in the backyards of the pharmacies rather than in the windows.

Another theory offered for the origin of the use of show globes by the English apothecaries is, that pharmacists in coastal towns displayed red and green globes (presumably on the model of a ship's running lights) to show sailors where to go when they got beaten up in water-front brawls.

It is by no means impossible that some early apothecaries at the English coast, and still more at the Scottish coast, displayed such lights for exactly the reason mentioned

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¹ Presented before the Section on Historical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, Jacksonville, Fla., April, 1919.

above. But the apothecaries of the fifteenth until the early eighteenth century in England, and especially in Scotland, were surgeons as well as pharmacists. If in coastal towns they displayed these lights, then they did it in their capacity as surgeons. There is no evidence whatsoever for the assumption that these cases, which when they existed at all, were serving locally restricted, non-pharmaceutical purposes, led to the adoption of show globes as symbols of pharmacy proper.

Besides, this theory has a peculiar similarity with the story, told in all earnest, that it was the light from a drugstore show globe which guided the invasion army of Caesar in its landing at the coast of Britain. Unfortunately for those who would like to believe in this story, there was no specialized profession of pharmacy at the time of Caesar.

The Great Plague in London

There is furthermore the assumption that it was the Great Plague in London (1665-66) which caused the London apothecaries to display bottles filled with red liquids and illuminated by lamps placed behind them in order to direct sick people to the apothecary shops. Since many of the physicians had fled the city, this announcement of the places where at least some help was offered, would have been undoubtedly a public health measure.

But even if this assumption is true, it ascertains the time in which the use of show bottles became popular rather than the origin of this custom as such. What then was this origin?

A Chemist's or an Apothecary's Sign?

One of the main differences in the political, as well as in the economic life in England and on the European continent, has been the fact of a comparatively much greater amount of liberty of action for the individual on the British Isles than in any of the countries on the European continent.

Looked upon with suspicion by the ecclesiastic as well as the medical and civic authorities, chemistry was still forced to work more or less underground everywhere in continental Europe until the recognized pharmacists made the preparation and sale of the then known and used chemicals a part of their legitimate business. But chemistry had been practiced openly in England even

before, and still more after, Paracelsus by a special group of artisans calling themselves "chymists." They were officially recognized in 1553. An act issued in this year mentions "apothecaries, druggists, distillers and sellers of waters and oils, and preparers of chemical medicines" as the groups whose stocks were subjected to surveillance and examination by the Royal College of Physicians of London. The "preparers of chemical medicines" thus had entered the English scene side by side with the apothecaries. While the latter during the sixteenth and the early part of the seventeenth century remained strong Galenists in theory as well as in practice, the "chymists" followed the path of Paracelsus and seized upon the preparation and sale of the chemical products concerned.

It is understood that the members of this new group were eager to publicize themselves to the public and to use all means possible to draw attention to their stores. What better way could be found than to catch the curiosity and imagination of the presumptive customers by an attractive symbol that was simultaneously significant of the new "mystery and art" discriminating its members from the apothecaries?

Tools of An Art

It is mostly tools of an art that become its symbols. If the mortar and pestle used for pounding, and mixing the drugs of the Galenic school and the pots and jars in which they were preserved, had been the traditional symbols of the apothecary for centuries, then the peculiarly shaped bottles and apparatus used in the processes thought at this time to be "chymical" presented themselves almost of necessity as the most adequate symbols of the "preparers of chemical medicines." All that was needed was to fill these vessels with one of the brilliantly colored liquid preparations which were the stock in trade of the new group of artisans. From there to placing a light or lamp behind these vessels was only one step.

In this connection it has to be kept in mind that the products of maceration as well as of distillation were at this time regarded as "chymicals." Therefore, it was the "chymists" who exposed the maceration vessels to the sun, hence to the eyes of the people, a procedure that, to follow the hypothesis of La Wall quoted above, represented the first

step to the exhibition of such vessels filled with colored liquids as symbols of the art.

The Adoption of the Sign of the "Chymist" by the Apothecary

There hardly seems to be any doubt that the show bottles did *not* originate with the English apothecaries but with their sixteenth and seventeenth century competitors, the English "chymists," and were even introduced and used in order to discriminate the latter from the former.

When then did the London apothecaries adopt the sign of the "chymists" and make it a *pharmaceutical* symbol?

It was still with the utmost caution that chemicals for internal use were listed in the first English official standard, the *Pharmacopoeia Londinensis* of 1618, and the authors were very careful in explaining this novelty to the conservative physicians and apothecaries. The preface to the book contains the following apologetic passage:

"Although we revere the wisdom of the old masters and have arrayed their preparations, so to speak, in the first line of battle, nevertheless we have not rejected or disdained in this book the auxiliary troops of the new chemistry, but have granted them a place, a corner in the rearguard, so as to have them at the disposal of dogmatic medicine, *i.e.*, ready for service, like auxiliaries."³

It was not very long until "the new chemistry" advanced from "the rearguard" to the "first line of battle" in the fight against disease. But still in 1653, in his commentary accompanying his translation of the new (1650) edition of the *London Pharmacopoeia*, Nicholas Culpeper expressed much doubt concerning the ability of the London apothecaries to prepare chemical remedies.⁴ Moreover, he refers those who want to use these remedies to the "Alchymists (to whose profession the making of them belongs)." That at this time this was a peculiarly English situation can be concluded from the statement made by the famous Paracelsian physician, Joseph Du Chesne, latinized Quercetanus (1544-1609), in his *Pharmacopoeia Dogmaticorum Restituta* (1607) that "all the *præparationes chymicae* could be obtained in the [continental European] pharmacies."⁵

The more chemical therapy grew into general recognition, the more these doubts in their ability to compete with the "chymists" forced the English apothecaries to prove to the public that they could and were

willing to do quite as well as their competitors. First it was certainly only a few members of the proud Society of Apothecaries of London who identified themselves with the "chymists" by adopting the sign of these upstarts. Once the start was made, however, their number certainly grew rapidly, and at the time of the Great Plague in London (1665-66) it had undoubtedly become general and was in those days of emergency especially effective.

There remained special "chymist" shops in England. But with the adoption of their sign pharmacy had stolen their thunder. The later development in English pharmacy closed the circle at the time the apothecaries of old developed into medical practitioners, with the chemists and druggists becoming their heirs as far as the practice of pharmacy was concerned. The symbol and its originators found the way back to each other in an amplified medium.

It is significant that outside of the English-speaking world show globes are found only in places visited by foreigners and are exhibited with the idea to attract English or American customers.

Conclusion

On the basis of the circumstantial evidence available the following statements seem to be justified:

1. The show globe had its origin about 1550 in the shops of the "preparers of chemical medicines" in London. Far from being intended as a symbol of pharmacy, the peculiarly shaped glass vessel containing a brilliantly colored liquid was apparently supposed to serve as an identification of the "chymist" shops and to discriminate them from the apothecary shops.

2. The growing recognition of chemical therapy forced the apothecaries, first in London and then in the whole of England, to make it known that not only the "chymists" but they too were able and willing to prepare "chemical medicines." The best way to do this was the adoption of the "chymists" symbol, the show globe.

3. The adoption of the show globe as a sign of pharmacy became common at the time of the Great Plague of London in 1665-66.

4. The fact that it was a particular English situation from which the show globe

(Continued on Page 610)

Practical Experience— A Historical Review

By ROBERT L. SWAIN*

IN THE report of The Pharmaceutical Survey "It is recommended to the National Association of Boards of Pharmacy that the present requirements for practical experience as to a prerequisite for licensure be modified to be of more practical value or else abolished."

This recommendation brings sharply into focus a controversy which has been waging for years. It would seem a logical recommendation, however, as certainly there is no point in holding onto practical experience as a legal requirement for registration unless it can be shown to have a valid relationship to that kind and degree of training essential for the practice of pharmacy.

There are those, however, who will see the recommendation somewhat as a paradox in that it is apparently predicated upon the idea that contemporary practical experience can be as valuable as it was fifty years ago, even though there is little connection between such experience today and the historical justification for it in that remote period.

Pharmaceutical legislation, as we understand the term, had its origin about 1870 and it was tempered to the pharmaceutical conditions which then obtained. There were few colleges of pharmacy and thus little in the way of formal pharmaceutical education.

The standards for registration were incorporated in the early pharmacy laws. Four years of practical drugstore experience were required, and a state board of pharmacy was established in order to determine what the applicant had learned from his four-year sojourn in a retail drugstore.

In the light of those times, this was an

adequate requirement in that the state board examinations were such as to establish, with a fair degree of accuracy, the competency of the applicant to become a registered pharmacist. There was a very sharp correlation between the objectives of the state board examination and the aims and purposes of practical drugstore experience.

Let it be remembered that practical experience in that day was, indeed, *practical* experience. The drugstore served as an educational institution, experimental laboratory and the sole source of pharmaceutical and professional proficiency.

Earlier Role

Practical experience occupied a high place in pharmaceutical affairs of the day, simply because it played an indispensable part in the training of pharmacists. Its scope is suggested by the fact that the retail pharmacist in 1870 made virtually every drug product which he used.

Practical experience, therefore, was practical experience in the actual manufacture of drugs and medicines. It was practical experience in the compounding of pharmaceutical preparations either dispensed on prescription or sold direct to the consumer.

The prospective pharmacist assisted his preceptor in the manufacture of tinctures, fluid extracts, elixirs, syrups, extracts, ointments, liniments, solutions, pills, embrocations, infusions, decoctions, emulsions, cerates, mixtures, plasters, confections, powders, suppositories, waters, spirits, and all other pharmaceutical products and preparations then in use.

A mere recital of these pharmaceutical types gives an impression of the scope and character of practical experience when i

* Editor, *Drug Topics*. Presented before the Section on Historical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, Jacksonville, Fla., April, 1949.

was, indeed, the mainstay of pharmaceutical practice.

In due course, there was felt the need for formal education in pharmacy. Great scientific concepts began to infuse medical and pharmaceutical thinking. Preceptors no longer found it possible to serve as employer and teacher, with the result that prospective pharmacists found themselves without organized or systematic training. What they learned was fragmentary as compared to what they would have learned had they followed rational and coordinated courses of instruction.

Then, too, their practical experience was interfered with by many nonpharmaceutical duties and chores, with the result that the prospective pharmacist's training became too haphazard and too submerged to meet the increasing needs for competent pharmaceutical practitioners.

So, in due course, colleges of pharmacy took over the professional and technical training of prospective pharmacists. The college courses covered two college years at first. The curriculum was later extended to three years, and finally to four. From the very beginning, practical experience was at war with formal pharmaceutical education. Throughout the extensive period in which the two-year curriculum was offered, four years of practical experience were also required.

Tenacious opinion was to the effect that while the student would learn much from his college career, what he learned would be of little value unless he could implement it into or predicate it upon practical drugstore experience.

Current Importance

So, practical experience held on, even though it was, by common consent, forced to a secondary role in the training of members of the profession. This experience, however, became of diminishing importance with the advent of formal pharmaceutical education.

When the three-year pharmacy curriculum was established, practical experience as a legal requirement for registration was cut to two years. In other words, the legal requirements for the registration of a pharmacist consisted of three years in a college of pharmacy and two years of practical experience in a retail drugstore.

The One-Year Requirement

When the four-year curriculum became accepted as the basis for pharmaceutical education, practical experience was reduced to one year. And this year of experience could, in most states, be obtained before entering college or during the vacation periods. About the only qualifications with respect to this one year was that it must be obtained after the applicant's sixteenth birthday.

Now that the four-year course is well established, practical drugstore experience has been further emasculated so as to permit six of the twelve months to be served in hospital pharmacy. A move is now under way which would carry the emasculation still further by giving credit to those pharmacists who might serve a brief military term as members of the Reserve Officers Training Corps, popularly known as the R. O. T. C.

While there may be those who still insist upon the value of practical experience, requirements for the education and registration of a pharmacist seem to me to have followed a logical course.

The concept that organized, systematic training in pharmacy is vastly more efficient than haphazard experience in a drugstore, is thoroughly sound. In fact, college of pharmacy training became utterly indispensable, if pharmacy was to keep pace with the progress in chemistry, bacteriology, pharmacology and pharmaceutical and medical practice.

It was also indispensable, if pharmacists were to hold their proper place among the other professions in the medical care field. Medical and pharmaceutical sciences were advancing so rapidly and on such a broad scale that a well-organized, properly correlated pharmacy curriculum was utterly essential to pharmaceutical progress.

So, today, we find that the historical basis for practical experience has about faded away. In the early days, the state board of pharmacy predicated its examinations upon four years of practical experience, because the drugstore was, in fact, the training ground for prospective pharmacists.

The state boards sought to establish by means of examinations just what the applicant had learned through his four years of work in a retail drugstore. The scope of the board examinations was limited, as both the

examiners and the examinees were products of practical experience.

Today, however, practical experience is of little value as an educational factor, simply because it is no longer adequate for the purpose intended. Colleges of pharmacy have quite properly superseded the preceptor system. With our colleges manned by competent professorial staffs and adequately equipped for laboratory work, both in the applied and experimental sciences, there is no longer any substantial need for looking upon the drugstore as an adjunct to pharmaceutical education.

Orientation Value

This does not mean that practical experience is worthless, but it does mean that we must see it from a different perspective. As I view the matter, practical experience should be regarded in terms of its orientation value, rather than a factor in pharmaceutical education.

The prospective pharmacist needs to know store routine, store arrangement, and to become familiar with the appearance and general nature of drugstore products. He needs to know their sources of supply. He needs to know much of inventory, turnover, and other economic and business factors constantly required in the successful operation of retail drugstores.

He needs to know how to meet people, and he will profit much by learning at first hand consumers' psychology and their predictable and nonpredictable reactions. In other words, practical experience is valuable as an orientation factor and should be developed and made more efficient from this point of view.

In this connection, it should be stressed that there is a determined effort upon the part of the National Association of Boards of Pharmacy, and boards of pharmacy in general, to revitalize practical experience into a valid educational force. The internship idea has been resorted to in some states in order to give dignity and professional worth to practical experience.

Notwithstanding the fact that these efforts are honestly being made, and that the N. A. B. P. and the cooperating state boards of pharmacy are most earnest in their desire to make practical experience stand up as an

House of Delegates' Chairman



Richard Q. Richards

RICHARD Q. RICHARDS, chairman of the House of Delegates of the **AMERICAN PHARMACEUTICAL ASSOCIATION**, was born at Sandersville, Ga., on December 1, 1892. He received his education in the public schools of Georgia and at Emory University Medical School, completing two

years of a medical course. From 1913 to 1915, while attending Emory University, Mr. Richards was an assistant in materia medica. He passed the State Board of Pharmacy in Georgia in 1909 and a year later was licensed in Florida. In 1915 he purchased a pharmacy in Lakeland, Fla., but sold it in 1920 to move to Ft. Myers, Fla., where he now operates two pharmacies. Mr. Richards was elected president of the Florida State Pharmaceutical Association in 1937. During the same year he became the first editor of that Association's Journal and has continued to edit the publication ever since. He has been a member of the Florida State Board of Pharmacy since 1938 and was its secretary from 1941 to 1949. Mr. Richards has been secretary-manager of the Florida State Pharmaceutical Association since 1940. He was president of the National Association of Boards of Pharmacy for the 1946-1947 term. Mr. Richards is particularly well known for his work in behalf of fair trade legislation. Active in civic and fraternal affairs in Ft. Myers, Mr. Richards has served as president of both the local Chamber of Commerce and the Kiwanis Club, and holds membership in the Masons and the Shriners.

essential educational factor, logic, so it seems to me, is working against them. Once the historical basis for practical experience has disappeared, it is difficult to visualize it in terms of its original purpose.

As I view this whole matter, pharmacy would stand to gain if we looked upon practical experience in terms of orientation and relied more and more upon the colleges of pharmacy to serve the basic educational needs of the profession.

SURVEY FINDINGS ANALYZED

. . . a critical review of the findings and recommendations of the Pharmaceutical Survey for the practicing pharmacist

ALTHOUGH the Findings and Recommendations of the Pharmaceutical Survey have been available for some time in printed form and have been publicized to some extent in the pharmaceutical press, it is apparent from the inquiries received at the office of the AMERICAN PHARMACEUTICAL ASSOCIATION and from our contacts with groups of pharmacists in various parts of the United States, that very little of the magnitude of the Survey and the importance of its findings have actually been impressed upon individual pharmacists.

It must be remembered that this Survey was undertaken largely for the purpose of determining the future content of the course in pharmacy to be taught to the oncoming generation of pharmacists.

It was felt by the officers of the American Association of Colleges of Pharmacy that criticism of the existing course leading to the degree of Bachelor of Science in Pharmacy was based mostly on opinion and not upon a thorough examination of the facts. Therefore they urged that a comprehensive survey of the practice of pharmacy and its existing teaching program be made by an authoritative agency.

It was also recognized that in order to learn at first hand what preparation a pharmacist should have for his life work in the era of change in which we are living with respect to drug therapy, it would be necessary to study the present functions of the profession of pharmacy and the atmosphere and environment in which it operates.

It was this larger aspect of the Survey which interested the American Council on Education and the American Foundation for Pharmaceutical Education in the proposed Survey.

When the American Foundation for Pharmaceutical Education made funds available for the Survey and the American Council on Education agreed to sponsor it Dr.

E. C. Elliott, former president of Purdue University was named as the director of the Survey. So as to give the director the necessary background and advice in the interpretation of his findings and to assist him in discovering and interpreting the essential facts dealing with the practice of pharmacy in its many and varied phases, it was decided to name an advisory committee which would include representatives of all branches of the pharmaceutical profession and the drug industry.

This advisory committee and its Consultants included representatives of the AMERICAN PHARMACEUTICAL ASSOCIATION, the National Association of Retail Druggists, The American Drug Manufacturers Association, the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, the Armed Services, the American Society of Hospital Pharmacists, the National Wholesale Druggists Association, the Proprietary Association of America, the National Association of Chain Drug Stores, the American Council on Education, the American Council on Pharmaceutical Education, the American Foundation for Pharmaceutical Education, various governmental agencies and the general public.

In order to understand the findings and recommendations of the Survey, pharmacists and others who are interested in them should know to what extent the members of this committee agreed on the scope of present-day pharmaceutical operations and to what extent they recognized the special professional and economic interests involved in evaluating data assembled by the Survey staff.

It was recognized that the future of the profession of pharmacy will be determined not only by the scientific techniques and the aspirations of the profession but also by the surrounding realities of American economic life and social practices.

It was deemed expedient for the committee to arrive at some "common understandings" as to certain essential factors affecting the professional development, economic stability, and public standing of pharmacy.

Regardless of the final recommendations of the Survey, it is important for pharmacists of the present day to see themselves as

others see them. Hence the "common understandings" of this committee, which devoted so much time and thought to an analysis of the current make-up of the profession of pharmacy and its existing practices should be invaluable to the practitioners of the profession and to the drug industry under any circumstances.

If the Survey had done nothing more than to record these "common understandings" it would have been worth while. This is so, not because the findings necessarily reveal anything not previously known, at least in part, to various segments of the profession, but because they show in clear terms and in one place the answer to the oft-repeated question "what is the matter with pharmacy?"

For years to come these "common understandings" may serve as a basis for working out solutions of many of pharmacy's problems and as a reminder of the extent to which the ideal varies from the real. Members of the profession and industry who are called upon to prepare addresses or papers on any phase of pharmacy will be rewarded by a perusal of these "common understandings." They may either answer some pertinent questions or serve as a challenge to find more appropriate remedies for existing faults than are suggested in the Survey recommendations.

In this article we shall content ourselves with a categorical statement of these "common understandings." In subsequent articles we shall develop the Findings and Recommendations flowing from them as interpreted by the Survey Advisory Committee.

The Common Understandings of the Survey Committee

PURPOSES OF THE PROFESSION

1. The dominant purposes of the profession of pharmacy are the development, preparation, standardization, preservation, dispensing, and sale of substances or articles used in the diagnosis, cure, mitigation, treatment, or prevention of disease, and the supplying of such scientific and personal services in connection therewith to the public and to and through the other recognized health professions as may be appropriate within this field of work.

EDUCATIONAL PATTERN

2. The educational pattern and the training procedures of pharmacy should be designed to qualify practitioners for effective cooperation with, and proper recognition by, the practitioners of the curative professions.

The first of a series of articles reviewing for the practicing pharmacist the significance of the recently completed Pharmaceutical Survey. In this article we record the "common understandings" of the Survey Advisory Committee which may well serve as guideposts to more satisfying and useful achievement for the profession.

STANDARDS FOR PUBLIC RECOGNITION

3. The public standing and recognition of pharmacy as a profession are determined by the moral character as well as by the scientific competency of its practitioners.

RECRUITING FOR THE PROFESSION

4. It is a continuing responsibility of the profession, individually and collectively, to participate in the recruiting, the selection, the training, and the education of young men and women possessing those abilities and those moral and civic attitudes required for the services essential to the welfare of the profession and those it serves.

RESPONSIBILITY FOR MAINTAINING INSTITUTIONS

5. By reason of the unique and increasing interdependence of the fields of application of the profession of pharmacy—whether manufacturing, wholesaling, retailing, teaching, publishing, advertising, or government—each must accept a definite responsibility for aiding in the maintenance, on a professionally high level of efficiency, of the institutions for the training of pharmacists, with special reference to the scientific facilities and the quality of the teaching and research staffs of such institutions.

DRUGSTORES AS HEALTH CENTERS

6. In this country the drugstore is considered by the public as the principal center for the practice of pharmacy; therefore, the best of the scientific intelligence and civic leadership of the profession must be directed to measures designed for the maintenance of these standards of personnel and of service entitling all drug stores to public confidence as health centers.

DRUG DISTRIBUTION MUST BE SUPERVISED

7. The profession of pharmacy, for the further development of sound policy of public health, should promote to the extent practicable the adoption of regulatory legislation whereby the direct distribution to the public of all drugs and medicinal substances shall be by, or under the supervision of, qualified licensed pharmacists.

LIQUOR SALES LOWER PRESTIGE

8. Notwithstanding the social, political, and economic forces resulting in the sale of beverage alcoholic liquors in retail drug stores, such sale must

be regarded as generally unfavorable to the public standing of these stores as representing the profession of pharmacy, the primary concern of which is the preservation of private and public health. Likewise, the operation of gambling devices in pharmaceutical establishments does not contribute to the prestige of the profession.

DUAL CHARACTER OF DRUGSTORES

9. The vast majority of drugstores have a dual character: first, that of pharmaceutical service and of a health supply center and, second, that of a convenient distributing center for a wide range of consumer goods; the material solvency of the first frequently has become dependent upon the second.

EDUCATION MUST BE PRACTICAL

10. The program for the training and education of those qualifying for the practice of retail pharmacy should take into account this dual character of the drug store, without, however, any lowering of the educational and technical standards established to insure the recognized professional status of pharmacy.

REVISION OF PHARMACY COURSE

11. By the extension to four years of the period of formal education and training, and by securing recognition, on a country-wide scale, of this as a standard preparation, prerequisite for examination and licensure, the professional status of pharmacy has been strengthened and safeguarded. The steps immediately ahead for further progress appear to be, (1) continued better selection of students, and (2) the focusing of the attention of the colleges and schools of pharmacy to securing the maximum professional results from the established four years of preparation. At the same time those institutions, adequately equipped, staffed, and supported, may be encouraged to adopt plans (a) for enabling students to secure specialized preparation for professional services other than for the characteristic retail drug store, (b) for the setting up of programs of study, on a sound graduate level, with special reference to the effective qualification of students for teaching and research, and (c) for enriching the period of undergraduate instruction.

CONTINUOUS EDUCATION NECESSARY

12. Rapid advance of scientific knowledge relative to health and disease and the resulting development of new medicinal agents have imposed upon the members of the profession increasing responsibilities. In view of this, the institutions for the education and training of pharmacists should develop and implement plans for the continuous in-service training of practicing pharmacists.

BOARDS OF PHARMACY MUST PROTECT PUBLIC

13. Under our system of government, whereby the public control of pharmacy lies largely within the authority of the State boards of pharmacy of the several States, these boards are agencies of critical importance; and such boards should be selected,

organized, supported, and operated so as to insure the effective administration and enforcement of the pharmacy laws designed to secure the maximum protection to the public in all matters concerned with the manufacture and distribution of drugs and medicines.

THE NEED FOR MANPOWER RECORDS

14. State boards of pharmacy and accredited colleges and schools of pharmacy should, at all times, maintain such personnel and other records as will enable intelligent planning to meet the future needs of the profession for trained manpower in each of the fields of application of pharmaceutical knowledge and skills in the interests of the public welfare.

COLLEGES MUST MEET HIGH STANDARDS

15. The setting of adequate standards for the instruction, equipment, and administration of colleges and schools of pharmacy, and the inspection and accrediting of such institutions by the American Council on Pharmaceutical Education, are requisites for the maintenance of professional training on a national level so as to enable interstate recognition of training and licenses to practice; nevertheless, such standards, inspection, and accrediting should operate to increase, rather than to diminish, the freedom and responsibility of each institution for the continued improvement of the quality and training of students.

ASSOCIATIONS MUST ASSUME RESPONSIBILITY

16. All pharmaceutical associations must assume a definite responsibility for the advancement of pharmacy as a health profession, and for carrying out programs of action designed to create a positive public opinion favoring those establishments where the basic professional service is rendered at a high level within a dignified and sanitary environment.

PROFESSION SHOULD SUPPORT ASSOCIATIONS

17. Every member of the profession should consider it a moral and professional responsibility to maintain active membership in and otherwise to contribute to the support of recognized professional organizations whose objectives include advancement of pharmaceutical standards.

MEDICO-PHARMACEUTICAL COOPERATION REQUIRED

18. The historical relation of the pharmacist and the physician continues to be a matter warranting the concerted efforts of the leadership of the professions of pharmacy and of medicine to formulate and to secure the acceptance of a better definition of their respective fields and methods of cooperation in the best interest of public health.

With these "common understandings" in mind, the analysis of the Findings and Recommendations should lead to a better understanding of the value of the Survey to the individual pharmacist and the profession and industry at large.

*Antihistaminic Drugs in Common Cold Therapy**

By JOHN M. BREWSTER, M.D.†

ALTHOUGH the common cold is universally considered to be a minor affliction, its cost in days lost from employment has been reckoned at 100,000,000 a year and the annual financial bill to the American public has been variously estimated at between one and three billion dollars. Although research has demonstrated a filterable virus as the causative organism as yet no specific treatment has been found and vaccines have not been generally accepted as being of benefit consistently.

Despite this gloomy picture, it is believed that unusual promise for the future lies in the performance of some of the newer synthetic antihistaminic drugs as disclosed in the following report of a study of their effects in the treatment of the common cold.

In a previous article¹ the unusually satisfactory results from the use of Benadryl as a therapeutic agent were reported. Encouraged by these findings, a new series was started in October, 1947, to determine whether similar excellent results could be obtained with other antihistaminic drugs. "Clinics" or stations for the treatment of "colds" were established at three focal points on the compound. All hands including the civilian employees were encouraged to report for treatment at the earliest possible moment after the onset of a cold. Pyribenzamine, Thenylene, Neoantergan, and Histadyl as well as Benadryl were included as the fundamental drugs used in the study. Since these drugs have a sedative effect, phenobarbital

was first chosen as the control medication. However, it was hurriedly abandoned when the complaints of the recipients threatened the success of the study. The combination of codeine sulfate with papaverine hydrochloride, as advocated by Diehl² was then chosen as the control medication. It offered the advantage of being generally accepted as the preferred treatment for the common cold and thus provided a real criterion with which to compare the antihistaminic drugs.

The dose for adults was arbitrarily set at 50 mg. for the antihistaminic drugs and at 16 mg. each of codeine sulfate and papaverine hydrochloride for the control medication. Each patient was provided with enough medicine to carry him until the next morning and was instructed to repeat the doses at four-hour intervals when awake, for at least three doses (more if symptoms persisted) and to report to the clinic the following morning. In order to establish their limitations as well as their therapeutic properties, no other medication was given with the antihistaminic drugs except stimulants to counteract their sedative effect. A 10-day follow-up check was made in most patients after discharge. Only ambulatory patients were treated in this series which included females as well as males. The youngest was 6 years of age and the oldest was 67. The group was made up of personnel attached to the hospital and included dependents and civilian workers.

A total of 572 patients were treated in the period from October 1, 1947, to May 1, 1948. A cold was considered to have been aborted or cured when all signs and symptoms dis-

* Study made at U. S. Naval Hospital, Great Lakes, Ill.
† Captain, Medical Corps, United States Navy. Adapted from an article published in the January-February issue of the *U. S. Naval Medical Bulletin*.

Introduction of preparations using the combined antihistaminic-analgesic-antipyretic therapy against coryza has been publicized recently. To give the pharmacist background information on this development, this condensation of an article on the experimental use of antihistaminics in treatment of the common cold is being published. The original article appeared in the January-February, 1949, issue of the *U. S. Naval Medical Bulletin*.

appeared completely within twenty-four hours of the beginning of treatment and remained absent for at least forty-eight hours after all treatment was stopped.

Findings

All symptoms were aborted in 19 (90%) of the 21 patients in whom treatment with antihistaminic drugs was begun within the first hour after the onset of symptoms and in 48 (87%) of 55 patients treated within two hours of onset. One hundred and sixteen (74%) of 156 patients who received treatment within six hours, and 165 (70%) of 234 patients who received treatment within 12 hours of onset were also cured.

A total of 77 patients were used as controls. The first five were given 32 mg. of phenobarbital every four hours for three doses. However, when all complained of marked drowsiness and that it failed to relieve any of their symptoms, its use was discontinued. The combination of codeine sulfate with papaverine hydrochloride was then adopted as the control medication. Within one hour after onset of symptoms a cure was obtained in one of the two patients to whom this combination was given. Cure was obtained in five (42%) of 12 patients who received treatment within six hours, and in 7 (31%) of 22 patients in whom treatment was begun within twelve hours. In none in which therapy was begun more than twenty-four hours after onset was a cure obtained.

All of the antihistaminic drugs studied were found to be effective in aborting colds when taken within the first few hours after

onset. In the majority of patients who received the antihistaminic drugs as the sole therapy and where treatment was begun too late to secure an arrest, the resultant colds were of short duration (three to five days). These colds were remarkable because of the absence of complications and the mildness of the symptoms.

As a result of the small dose used, and the short periods in which treatment was required, there were no instances of severe reactions, severe side actions, or toxemia. Side actions noted were drowsiness, and dryness of the mouth; infrequently, headache and dizziness; and, rarely, nausea. A variation in severity of the drowsiness was noted. Benadryl had a pronounced sedative effect in almost every case in which it was used. This was found to be an asset in patients willing to remain in bed during treatment or when used only as the final night dose of antihistaminic drug in any case. However, it was a real hazard in ambulatory patients when more than one dose was taken. Pyribenzamine, Thenylene, and Histadyl all produced a moderate degree of sedation. Neoanergan was found to have little or no sedative effect in the majority of cases in which it was given, and thus became the favorite medication of the ambulatory patients who had had experience with any of the other antihistaminic drugs. All were warned that drowsiness was to be expected and were cautioned to avoid driving a car while under treatment.

Drowsiness Reduced

To combat the sedative effect, racemic amphetamine sulfate (Benzedrine) in 2.5 to 5 mg. doses or dextro-amphetamine (Dexedrine) in 5 to 10 mg. doses were frequently given with the initial dose of antihistaminic drugs whenever treatment was begun before 4 o'clock in the afternoon. These effectively reduced the sensation of drowsiness in most cases and had the happy effect of lifting many patients out of the mild mental depression that is often a symptom in colds. Benzedrine should not be prescribed in the presence of arterial hypertension, cardiovascular disease, or nervous tension; and to avoid wakefulness at night, neither drug should be taken later than 4 o'clock in the afternoon.

It has been established that an attack of the common cold provides an immunity

lasting from three to seven weeks. It was observed in this study that even the very mild and attenuated colds that resulted from prompt and continued treatment with the antihistaminic drugs conferred a normal degree of immunity. It was further observed that the cure of a cold became progressively more difficult the longer the time interval separating the present attack from the last cold experienced, and that, lacking immunity in the presence of an epidemic, the treatment frequently had to be repeated at two- to five-day intervals.

Conclusions

1. It is believed that the initial phase of the common cold is an allergic reaction.

2. Antihistaminic drugs, by interrupting this allergic reaction, are capable of aborting the common cold when treatment is begun in the initial phase.

3. The effectiveness of these drugs in the treatment of the common cold is not dependent upon the sedative effect common, to a greater or lesser degree, to them all.

4. Two or three doses of these drugs at four-hour intervals are adequate to effect an abortion of symptoms in 90% of the cases when treatment is instituted within a few hours after onset. Failing this, their continued use as palliative treatment shortens the period of morbidity and eliminates many complications.

5. Complications of colds should be treated with penicillin, the sulfa drugs, or surgery as required.

6. The antihistaminic drugs should prove invaluable in the control of the contagion of the common cold when and if adopted as treatment by the majority or in groups that can be controlled, such as military or naval personnel.

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VA Radioisotope Program

The Veterans Administration has spent approximately \$1,000,000 in developing its radioisotope program, the VA's Department of Medicine and Surgery has revealed. Research units have been established in 12 VA hospitals.

NOTICE

**An Open Hearing on the Standards
Proposed for the
U. S. Pharmacopoeia,
Fourteenth Revision
Will Be Held on
Monday and Tuesday,
November 7 and 8
at the
Bellevue-Stratford Hotel
Philadelphia, Pa.
Starting at 9 a. m.**

American Society of Hospital Pharmacists Election Results

Officers of the American Society of Hospital Pharmacists for the 1950-51 term, recently elected by mail ballot, are: President-elect, I. Thomas Reamer, Durham, N. C.; vice-president-elect, Grover C. Bowles, Rochester, N. Y.; and treasurer-elect, Sister M. Jeanette, Jamaica, N. Y. The officers elected will be installed in Atlantic City during the week of April 30, 1950.

The secretary of the Society is nominated by the executive committee and elected annually by the A. S. H. P. House of Delegates, which includes delegates of the affiliated chapters and the executive committee.

The ballots were counted by a committee of three A. S. H. P. members appointed by President Herbert L. Flack. Included on the committee were Mrs. Katie Moy Lim, Mt. Alto Veterans Hospital, Washington, D. C.; Dr. John S. Mitchell, Freedman's Hospital, Washington, D. C.; and Miss Gloria Niemeyer, secretary, American Society of Hospital Pharmacists, Washington, D. C.

The members also voted to amend the Society's constitution by adding a section defining a hospital pharmacist since only practicing hospital pharmacists are eligible for active membership in the Society. Another change in the constitution makes it mandatory that associate, as well as active members, be members of the AMERICAN PHARMACEUTICAL ASSOCIATION.

The present officers of the American Society of Hospital Pharmacists who will continue to function until the Atlantic City convention in April are: President, Herbert L. Flack, Philadelphia, Pa.; vice-president, W. Paul Briggs, Washington, D. C.; secretary, Gloria Niemeyer, Washington, D. C.; and treasurer, Sister Mary Junilla, Los Angeles, Calif.

FAIR TRADE AND OTHER CURRENT PROBLEMS DISCUSSED AT N. A. R. D. CONVENTION

THE 51st Annual Convention of the National Association of Retail Druggists held September 18 to 22 at New York City was devoted chiefly to discussions on taxes, profit margins, fair trade, professional and public relations, sales promotion, and other subjects of interest to the retail pharmacist.

Vice-President Alben W. Barkley warned the N. A. R. D. delegates in his address to the convention not to look for an immediate reduction in excise and other taxes as long as the cold war continued and the need for maintaining present high Government budget existed.

President Edgar S. Bellis in his annual address recommended that the N. A. R. D. adopt a program which he said would "focus much more attention on the problems of public health." Principal points of Mr. Bellis' program are:

- (1) Further emphasis on the necessity for drugstore sanitation.
- (2) Practicable suggestions on projects for the improvement of general conditions that involve diseases.
- (3) Initiation of community surveys to ascertain the facts anent the status of public health.
- (4) Extension of facilities to provide material for druggists to use in connection with campaigns for the prevention of various ailments.
- (5) Additional cooperation with established and legitimate agencies that work to eliminate many causes of diseases.

Frank W. Moudry, newly elected N. A. R. D. President, in his report to the Convention as chairman of the Executive Committee, said that the N. A. R. D. would continue to fight for a reduction in taxes and predicted that the excise tax on cosmetics and toiletries will be eliminated in 1950. Mr. Moudry also outlined the plans of the N. A. R. D. with regard to fair trade and public relations, restated the position taken earlier by the organization with respect to compulsory health insurance, barbiturate regulation, the Pharmaceutical Survey, Federal control of prescription practice, cooperatives, and other topics of interest to retail pharmacists.

N. A. R. D. Executive Secretary John W. Dargavel told the Convention that drugstore sales during 1949 "may possibly pass last year's \$3,687,000,000 and at least will hold their own as the year draws to a close. The outlook is decidedly favorable," he added.

Official AMERICAN PHARMACEUTICAL ASSOCIATION delegates to the N. A. R. D. Convention were A. PH. A. Vice-President Harold C. Kinner, Robert Gerstner, and Fred D. Lascoff, who also was one of the speakers on the Convention Program. A number of other A. PH. A. members were in attendance, including A. PH. A. President Glenn L. Jenkins and Secretary Robert P. Fischelis.



FRANK W. MOUDRY

Dr. Lascoff urged pharmacists to keep informed regarding the advances in drugs. He suggested that they watch the scientific sections of the drug journals, confer with detail men, read the health columns in newspapers and the medical and science articles in *Time*, *Life*, *Reader's Digest* and other popular magazines, and scan each issue of the *Journal of the American Medical Association*. "After obtaining information on a new drug," Dr. Lascoff said, "it is well to file it away alphabetically for future reference." Another suggestion advocated by the speaker was that when any new drugs are released, pharmacists should place them in a conspicuous place with the literature concerning them so that visiting physicians may see and study the drugs.

Dr. Lascoff pointed out that another problem with which pharmacists are concerned daily is the lack of uniformity in drug manufacturers' price lists and catalogues. He said that the manufacturers should get together and make all of their catalogues conform as to uniformity of size, makeup, style and content. He also urged manufacturers to mark their prescription legends more clearly.

Among the other speakers addressing the Convention were Senator Hubert H. Humphrey of Minnesota; Representative Charles A. Halleck of Indiana; Representative Wright Patman of Texas; Federal Security Administrator Oscar R. Ewing; U. S. Commissioner of Narcotics H. J. Anslinger; Dr. Louis H. Bauer, chairman of the board of trustees, American Medical Association; Charles F. Lanvermeyer, chief pharmacist, Abbott Laboratories; Robert A. Hardt, vice-president, Hoffmann-LaRoche, Inc.; Horace S. Thomas, assistant sales manager, Eastman Kodak Co.; J. W. Snowden, drugstore planning expert; and J. W. Lansdowne, assistant manager, trade relations department, Eli Lilly and Co.

Other officers elected at the N. A. R. D. Convention in addition to Mr. Moudry are: Marion Hardesty, Louisville, Ky., first vice-president; J. J. McKeighan, Flint, Mich., second vice-president; John S. Veenker, Northwood, Iowa, third vice-president; Ralph Rooke, Richmond, Va., fourth vice-president; and John Lynch, Philadelphia, Pa., fifth vice-president. John W. Dargavel, Chicago, Ill., and Clem Czerwinski of Milwaukee, Wis., were renamed executive secretary and treasurer, respectively.

A. Ph. A. Branches



STUDENT BRANCHES

APPROXIMATELY 150 members and their guests attended the annual summer party of the **University of Utah Branch** on August 13. The students had an opportunity to meet the new assistant professor of pharmacy, Dr. George E. Osborne, who came to Utah from Purdue University.

Recently elected officers of the **Temple University Branch** for the 1949-50 school year are: John Hinkle, president; Andrew S. Kohut, vice-president; Henrietta L. Zielinski, secretary; and Norman S. Schreiber, treasurer. A full year of activities has been planned.

Recently elected officers of the **Student Branch of the Alabama Polytechnic Institute** at Auburn are: Joe Wallace, Sweetwater, Tenn., president; Fred Fitzgerald, Apalachicola, Fla., vice-president; and Don Tillery, Phenix City, Ala., publicity director. Dr. J. T. Strickland, head of the college infirmary, addressed the last meeting of the Branch speaking to the students on "The Relationship between the Doctor and the Pharmacist."

New officers will be elected at the October meeting of the **Howard College Branch**, Birmingham, Ala. A representative of Eli Lilly & Co., Indianapolis, Ind., will be present at this meeting to explain the trip the students plan to take to the Lilly plant during Thanksgiving week.

LOCAL BRANCHES

THE General Section of the **Cincinnati Branch** at its last meeting was host to the Scientific and Hospital Sections and the recent graduates of the Cincinnati College of Pharmacy. President Rudolph Puls reported on the Jacksonville Convention; E. O. Hindmann of Parke, Davis & Co., related the historical background and development of *Chloromycetin*; and several faculty members of the College gave brief talks followed by questions and discussion.

The first meeting of the fall session of the **Northern California Branch** was held September 21 with Dr. Troy C. Daniels as guest speaker. Dr. Daniels reported on the recent survey of phar-

Remington Medal Dinner

The Remington Medal Presentation Dinner in honor of Dr. Ernest Little, Rutgers University College of Pharmacy, will be held Tuesday evening, December 6, 1949, at the Hotel New Yorker. Dress informal. Tickets \$7.50. Sponsored by the New York Branch of the A. Ph. A., 110 W. 68th Street, New York 23, N. Y.

macy in Japan, and related many interesting incidents of his trip with the A. Ph. A. Mission. He showed the group colored films which he took in Japan.

Newly elected officers of the **Michigan Branch** of the **AMERICAN PHARMACEUTICAL ASSOCIATION** are: Walter L. Griffith, president; Verne Crandall, vice-president; Gordon Guyette, secretary; and Fabian A. Maurina, treasurer.

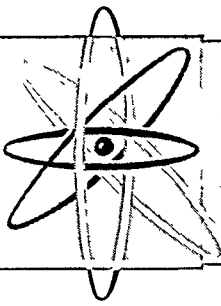
A. M. A. Withdraws Acceptance of Sulfathiazole

The American Medical Association Council on Pharmacy and Chemistry has withdrawn its acceptance of sulfathiazole and sulfathiazole sodium, according to an announcement in the Sept. 24 issue of the *Journal of the American Medical Association*.

"The council recently considered the present status of sulfathiazole," the statement says. "It considered the fact that approximately 18 per cent of patients who receive sulfathiazole develop untoward reactions such as fever, rash, acute leukemia, leukopenia, and other manifestations of toxicity (which compares with about 16 per cent for sulfapyridine, 12 per cent for sulfanilamide, 6 per cent for sulfadiazine, and 7 per cent for sulfamerazine).

"Further question of the need for continuing acceptance of sulfathiazole was raised in view of the fact that less toxic sulfonamide drugs and penicillin and streptomycin are now available. In conformance with its policy of withdrawing acceptance of a toxic drug when a less toxic but equally effective agent becomes available, the council voted to omit sulfathiazole and sulfathiazole sodium from the 1949 edition of *New and Nonofficial Remedies*.

"Further consideration of this subject was precipitated by the fact that there are at present marketed a number of sulfonamide mixtures containing sulfathiazole or sulfathiazole sodium. . . The council therefore declared mixtures of sulfathiazole or sulfathiazole sodium with other agents unacceptable for inclusion in *N. N. R.*"



SCHIZOPHRENIA victims may benefit from the present search for new sources of cortisone, powerful new weapon against arthritis and rheumatic fever, according to Drs. Hudson Hoagland and Gregory Pincus of the Worcester, Mass. Foundation for Experimental Biology. The malfunctioning of the adrenal glands is known to be involved in schizophrenia and it is believed that injections of cortisone may prove to be effective treatment. Part of the latest search for this chemical is a joint expedition to Switzerland and Africa, sponsored by the U. S. Public Health Service and the Department of Agriculture [This Journal, 10: 537 (1949)].

ALLERGY plays an important role in the susceptibility to colds, reports an editorial in the September 10 issue of the *Journal of the American Medical Association*. This conclusion is based on studies of over 3000 cold-susceptible patients. Eighty per cent of the first 1200 patients showed an allergic condition or were from allergic families.

DRAMAMINE, the new anti-seasickness remedy, may relieve the nausea which afflicts one-fourth to one-half of expectant mothers, according to investigators at Johns Hopkins University and Hospital. Although a number of remedies, including vitamins and psychiatric treatment, had failed to relieve their symptoms, 31 of 43 women given the drug experienced complete relief within three hours.

HAYFEVER is "definitely a disease of civilization," specialists agree, and in recent years there has been an increase of cases of hayfever and other allergies. Over three per cent of the entire population, or 4,000,000 persons, are victims, reports Dr. Fred Wittich, secretary of the American College of Allergists.

PENICILLIN, taken in daily prophylactic doses, will not keep people from catching colds and other respiratory ailments. This fact was established by studies carried out for one year on 2937 volunteers in the Permanente Hospitals at Oakland, California. Half of the test group were given penicillin pills and the other half received harmless chalk pills. Records at the end of the period showed practically no difference between the two groups in amount of respiratory or other illness. [*J. Am. Med. Assoc.*, 140: 1324(1949)].

MILIBIS (WIN 1011), new cure for amebic dysentery, has now been made available to physicians in this country, and will soon be introduced in South

America. The compound, known chemically as bismuth glycolylarsanilate, is being marketed by Winthrop-Stearns, Inc. Cases of amebic dysentery, once considered exclusively a tropical affliction, have been increasing in this country for the past 15 years.

FLUORESCENT LIGHTS can produce a sunburn-like effect on the skin of people working near them, it was recently discovered by Dr. R. Ralph Bresler, chairman of the Industrial Health Section of the Philadelphia County Medical Society. The safest and most practical remedy was found to be the placing of all-around plate-glass shields about the fluorescent fixtures to absorb the radiation without cutting down the light.

MOTH BALL POISONING causing anemia in children has been reported for the first time in the U. S. by Drs. Wolf W. Zuelzer and Leonard Apt of the Children's Hospital of Michigan and Wayne University College of Medicine in Detroit. The physicians' report, appearing in the September 17 issue of the *Journal of the American Medical Association*, states that each of the patients was about two years old and had been seen sucking on moth balls. The children were extremely ill and feverish when admitted to the hospital, but complete recovery followed blood transfusions and doses of sodium bicarbonate and sodium lactate for alkalization of the urine.

BACITRACIN, when applied in ointment form to the skin of 138 patients with various types of skin conditions, is reported to have affected cures without resulting in sensitization. One hundred fifty patients were patch-tested at Walter Reed General Hospital and Gallinger Municipal Hospital at Washington, D. C., during the investigation.

A **GIANT ELECTRONIC BRAIN** with a magnetic memory was recently displayed before 500 scientists at a Harvard symposium. Called "Mark III," it is Harvard's third large computing machine, and will be used to attempt to solve some of civilization's major problems, ranging from supersonic flight to the economics of prosperity. There are many more large-scale digital calculators, as they are called, in existence. Most of them are in the United States, but several are under construction in Europe. Stubborn problems in mathematical physics, involving atomic energy, cosmic rays, and the nature of matter itself, are being tackled by the new machines.

» Findings and Recommendations of A. Ph. A's Mission to Japan «

A SUMMARY of the findings and recommendations of the AMERICAN PHARMACEUTICAL ASSOCIATION's Mission to Japan has been made public by General Douglas MacArthur, Supreme Commander for the Allied Powers, through his chief of the Health and Welfare Section, Brigadier General Crawford F. Sams. Immediately following the receipt of General Sams' summary, A. Ph. A. Secretary Robert P. Fischelis received a letter from the Japanese Pharmaceutical Association highly commending the A. Ph. A. Mission and expressing gratitude on behalf of Japanese pharmacy for this visit and the helpful recommendations submitted.

The Mission, headed by A. Ph. A. President Glenn L. Jenkins, spent the month of July in Japan meeting with SCAP and Japanese officials and organizations and inspecting the various institutions devoted to teaching pharmacy and to the production and distribution of drugs.

The findings and recommendations as summarized by General Sams are as follows:

1. Establishment of a minimum four-year college requirement for pharmacists instead of the previous three-year course was commended. However, it was recommended that more emphasis be placed on practical pharmacy instead of pharmaceutical chemistry and that training in pharmacy administration and pharmaceutical ethics be more adequate.

2. Good progress in the reorganization of the pharmaceutical profession and its national association was observed. Harmony was found to exist between medical, dental and pharmaceutical leaders.

3. The Pharmaceutical Affairs Law 197, July 29, 1948, was found in general to be an excellent basic document. Some minor changes were recommended.

4. Pharmaceutical manufacturing was found to be progressing excellently. Many items are equal to or in excess of Japanese demands. However, physical plants were at a dangerous level of deterioration.

5. More long-term research along fundamental lines could be done if the economy permitted.

6. Retail drug stocks were good almost everywhere. Very few prescriptions are filled at pharmacies, showing lack of support by the medical professions.

7. Organization and functioning of hospital pharmacies was good in general. There was lack of standardization of medicines, making rational treatment more difficult and medicines more expensive.

8. Medicine and pharmacy should be separated by legal and educational means to the end that physicians diagnose and prescribe and the pharmacists secure, store, compound and dispense pharmaceutical products on the physician's prescription.

9. Prescriptions be required for powerful and poisonous drugs.

10. A small model plant be built to demonstrate proper manufacturing techniques.

11. All persons compounding and dispensing drugs meet the same requirements as to educational licensure and equipment, and only qualified pharmacists be appointed to key positions.

12. Greater exchange of teachers between colleges in Japan and between Japan and other countries.

13. A nation-wide survey be made to determine man-power and educational needs to determine proper distribution of both schools and graduates.

14. Study be given to a sound plan of financing colleges to lessen their dependence on tuition fees.

General Sams said, "The report to SCAP indicates an appreciation of the problems facing the Occupation Forces in the field of pharmaceutical affairs and the accomplishments already made. The Mission complimented the progress made by the Ministry of Welfare in pharmaceutical education and the manufacture and distribution of drugs, biologics, instruments and other materials under the guidance of SCAP advisers—difficult economic conditions and far-reaching social changes notwithstanding."

He added that "The custom of the Japanese, when ill, to go in succession from the seller of drugs, to the pharmacists, to the drug dispenser with some medical background and finally to a medical doctor was found by the Mission to be common among the bulk of the population. Poor medical care and poor pharmaceutical service result from such practices. Delineation of specific duties and functions of doctors and pharmacists in hospitals and health centers was found to be good and medical care and pharmaceutical service correspondingly good."

In addition to President Jenkins, the pharmaceutical mission consisted of: Dr. Hugh C. Muldoon, Dean of the School of Pharmacy, Duquesne University; Dr. Troy C. Daniels, Dean of the College of Pharmacy, University of California at Berkeley; Don Francke, Chief Pharmacist, University of Michigan Hospital at Ann Arbor, and F. Royce Franzoni, Vice-President of the National Association of Boards of Pharmacy, member of the District of Columbia Board of Pharmacy.

Miller Named to Succeed Cook as

Director of U. S. P. Revision



LLOYD C. MILLER

AT A SPECIAL meeting of the U. S. P. Board of Trustees held on September 17, 1949, Dr. Lloyd C. Miller was unanimously elected as Director of Pharmacopoeial Revision for the new decade which will follow the meeting of the U. S. P. Convention in Washington in May, 1950. He will succeed the retiring chairman, Dr. E. Fullerton Cook, who has been associated with the U. S. P. since 1901, and has served as chairman since 1920. Announcement of the action of the Board of Trustees was made by its Secretary, Dr. Adley B. Nichols.

Dr. Miller comes to this important position with well-rounded training in many of the fields which are so vital to the pharmacopoeial program of today. He has been a member of the U. S. P. Revision Committee since 1944 and became chairman of the Subcommittee on Biologic Assays in 1946. He was in close contact also with the revision of the U. S. P. XI and of XII, while he was a member of the staff of the Food and Drug Administration.

Dr. Miller was born in Streator, Ill., on July 2, 1907. He received a B.A. degree with honors in chemistry from Pomona College in California in 1929 and his Ph.D. from the University of Rochester School of Medicine and Dentistry in 1933 with his major in biochemistry.

From 1929 to 1933, Dr. Miller was teaching assistant in pharmacology, University of Rochester School of Medicine and Dentistry; 1933 to 1935, research fellow at the Upjohn Company, serving in biochemistry, primarily in the steroid sex hormone field; 1935 to 1943, with the division of pharmacology, U. S. Food and Drug Administration, Washington, D. C., starting as an assistant pharmacologist and advancing to senior pharmacologist in 1940, his work being both regulatory and investigative in nature; 1943 to 1944, senior pharmacologist with the Winthrop Chemical Co.; 1944 to the present, director, biology division, Sterling-Winthrop Research Institute, Rensselaer, N. Y., now directing the activities of a staff of about 65 biologists who represent several

specialties including bacteriology, virology, biochemistry, pharmacology, and pathology.

Dr. Miller has been one of the most active members on the U. S. P. Revision Committee, handling his own subcommittee and related problems in a thorough manner, and also taking an active interest in the several other U. S. P. subcommittees and advisory boards on which he serves. His contact with U. S. P. activities embraces the U. S. P. XI, XII, XIII, and XIV.

Dr. Miller is a member of the AMERICAN PHARMACEUTICAL ASSOCIATION, the American Society for Pharmacology and Experimental Therapeutics, the Biometrics Society, Sigma Xi, the medicinal chemistry division of the American Chemical Society, the American Association for the Advancement of Science, and the New York Academy of Sciences.

The Ebert Prize of the AMERICAN PHARMACEUTICAL ASSOCIATION was awarded Dr. Miller in 1940 for research on the assay of digitalis which was carried out with his associates in the Food and Drug Administration. This research pioneered the application of statistical methods of analysis in biological assays in this country. He is the author or co-author of more than 25 published scientific papers, covering various phases of pharmaceutical research. Dr. Miller has recently been appointed associate editor of the *Journal of Pharmacology and Experimental Therapeutics*.

The responsibility of appointing a Director of Pharmacopoeial Revision is placed in the hands of the Board of Trustees under the By-Laws of the U. S. P. Convention. In selecting a successor to Dr. Cook, the Board requested the advice and suggestions of the U. S. P. Convention Nominating Committee, according to the announcement, and these, it was stated, were subsequently given due consideration in arriving at the final decision.

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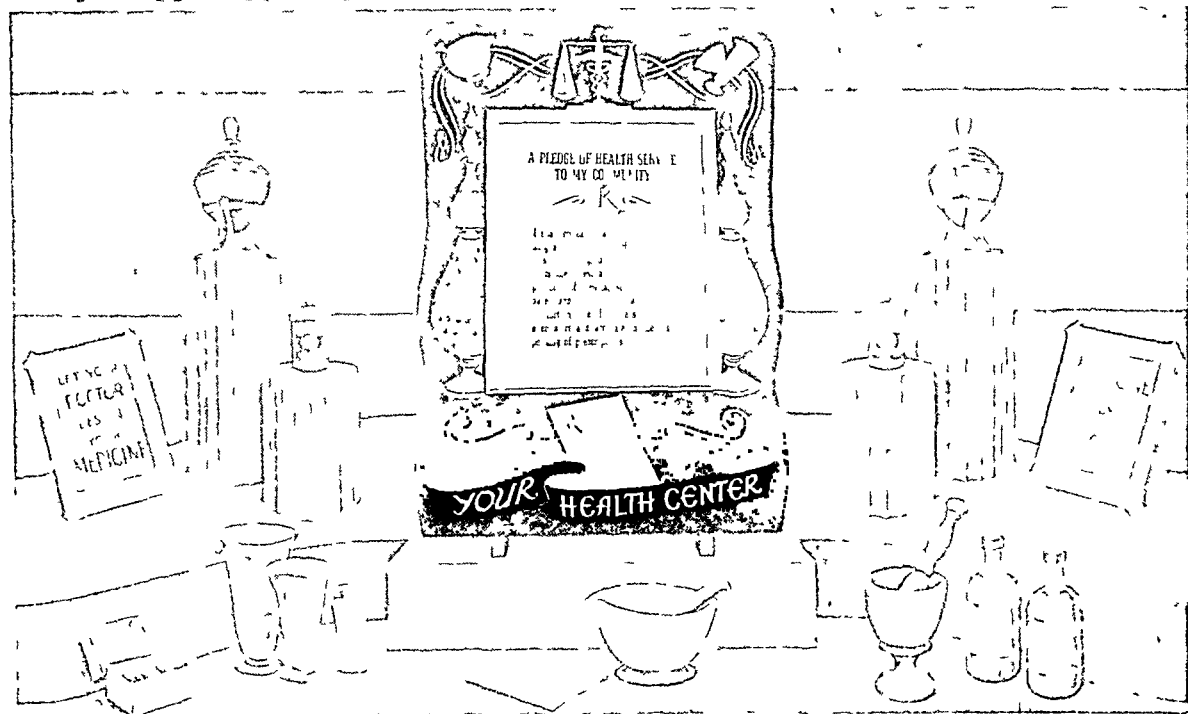
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AURORA, ILLINOIS

SOLD TO ONLY ONE PHARMACIST IN A TRADING AREA.

Lilly Digest for 1948 Reveals Increased Prescription Volume

CONTINUING a trend evidenced during the past five years, the Lilly Digest of Operating Statements for 1948 reveals that the average income per pharmacy from prescriptions again increased in the past year. In the publication just issued by Eli Lilly and Company, data from 1122 retail pharmacies are analyzed, including reports from 806 pharmacies which supplied separate and specific figures on the operation of the prescription department.

The Lilly Digest is an annual compilation of costs, margins, expenses and profits of retail operation and is prepared from the statements of income and expense which have been submitted for analysis by individual proprietors. Each proprietor who supplies a statement of income and expense receives an individual report based on a comparison of his figures with those of other pharmacies of

the same size and type. This individual service is offered by Eli Lilly and Company without cost or obligation of any kind and upon a strictly confidential basis. Full directions about the facts needed to make such an analysis will be found on page 39 of the 1948 Digest which has been released to all of the nation's pharmacies.

An interesting comparison of costs, margins and profits of pharmacies in 1947 and 1948 has been prepared by the Eli Lilly Company and is reproduced in Table I. The 1947 figures represent reports from 739 pharmacies as compared with those from the 806 pharmacies reporting in 1948.

According to Eli Lilly and Company, in its publication, *Tile and Till*, a study of the figures in Table I reveals several facts of importance to proprietors. It is believed that summary of these facts which is listed

TABLE I
COMPARISON OF COSTS, MARGINS AND PROFITS OF PHARMACIES IN 1947 AND 1948

(This table covers only those stores that reported on prescription operation)

	1947	1948	Dollar change	Per cent change	Per cent of total sales, 1947	Percent of total sales, 1948
Average income per store from prescriptions.....	\$12,271	\$14,745	\$2,474	20.2	16.6	18.8
Other sales per store	61,755	63,881	2,126	3.4	83.4	81.2
Total sales per store.....	\$74,026	\$78,626	\$4,600	6.2	100.0	100.0
Cost of goods sold.....	49,740	52,879	3,139	6.3	67.2	67.3
Gross margin.....	\$24,286	\$25,747	\$1,461	6.0	32.8	32.7
Store expenses.....	18,631	20,490	1,859	10.0	25.2	26.0
Net profit.....	\$ 5,655	\$ 5,257	-\$ 398	- 7.0	7.6	6.7
Value at cost of prescription-department stock.....	\$ 2,726	\$ 3,266	\$ 540	19.8	.....	.....
Value at cost of other merchandise stock.....	9,336	9,857	521	5.6	.....	.....
Value at cost of total merchandise stock.....	\$12,062	\$13,123	\$1,061	8.8	16.3	16.7
Annual rate of turnover of total merchandise stock.....	4.1	4.0	.....	-2.3	.....	.....
Average number of prescriptions filled per store.....	8,726	9,742	.....	11.6	.....	.....
Average prescription price.....	\$ 1.41	\$ 1.51	\$ 0.10	7.6	.....	.....
Percentage of prescription-department stock to prescription sales.....	22.2	22.7	.....	.....	.....	.....
Percentage of prescription-department stock to total merchandise stock...	22.6	24.6	.....	.....	.....	.....

below should be helpful to all proprietors in their plans to obtain more profits in coming months:

1. The rate of increase in income from prescriptions in 1948 (20.2%) was nearly six times the rate of increase in all other retail pharmacy sales.
2. The increase in number of prescriptions filled was 11.6%. Therefore, the increase in income from prescriptions came, in part, from a rise in the average price received. The average price received for prescriptions was up from \$1.41 in 1947 to \$1.51 in 1948. This rise of ten cents, or 7.6%, in average prices received for prescriptions is probably not due to any change made by proprietors in the past year in their methods of pricing prescriptions. The prescription price rise undoubtedly represents, principally or entirely, the changes in the past year in types of medication prescribed by physicians.
3. The rise in the cost value of prescription stock on hand in drugstores was 19.8%. This is consistent with the rise of 20.2% in prescription income.
4. As a result, the percentage of prescription-department stock to prescription income remained about the same in 1948 as it was in 1947. In 1948, prescription-department stock was 22.7% of prescription income. In 1947 it was 22.2%.
5. The percentage of prescription-department stock to total merchandise stock rose from 22.6% in 1947 to 24.6% in 1948. This reflects no more than the rise in the proportion of prescription income to total sales in pharmacies.
6. Prescription income went up from 16.6% of total sales in 1947 to 18.8% in 1948. This is a continuance of a trend which has been in evidence for several years and has been reported in previous editions of the Lilly Digest.
7. The rise of 5.6% in the cost value of merchandise stock other than prescription stock was considerably higher than the sales increase of 3.4% in these other departments. This emphasizes the importance of especially watchful care by proprietors of their

investment in merchandise stock in the nonprofessional departments of their pharmacies.

8. The drop in the average rate of turnover of the entire merchandise stock was from 4.1 times in 1947 to 4.0 times in 1948. This drop in turnover rate also continues a trend that has been in effect for several years. The investment in merchandise stock in a pharmacy has been rising at a faster rate than sales. It is evident from the figures in Table I that the opportunities to check this rise in merchandise stock are to be found in departments other than the prescription department. The prescription-department increase in merchandise stock merely reflects the growing importance of prescription income.
9. The gross margin percentage obtained in 1948 was almost exactly the same as in 1947.
10. The rise in store expenses was nearly 40% greater than the rise in sales.
11. As a result of a stationary gross-margin percentage and a rise in store expenses, net profits dropped 7.0% under 1947, or to 6.7% of sales.

Prescription Opportunities Everywhere

The Lilly Digest points out that every pharmacy is equipped and licensed to supply prescription service and it is shown that the more such license and equipment are used, the greater the proprietor's profit is likely to be. Opportunities for a profitable amount of prescription receipts have been found in cities of all sizes and in all sections of the country. It is also shown that prescription filling is a year-round business; the number of prescriptions filled in the summer months holding up well in comparison with the busiest winter months.

Federal Regulations Extended over Seven More Synthetic Drugs

Seven more synthetic drugs were placed under the Federal narcotic regulations by presidential proclamation on August 21, 1949, and are subject to the same controls over production and sale as are narcotics. These drugs are Bemidone, Nisential, NU-1779, NU-1932, N.I.H.-2933, N.I.H.-2953 and CB-11, also known as Heptazone or Heptalgin.



COLLEGES

The George Washington University School of Pharmacy, Washington, D. C., announces the appointment of two full-time staff members: Dr. John W. Schermerhorn, assistant professor of pharmaceutical chemistry, who received his Ph.D. degree from the University of Minnesota this year; and Dr. Salvatore J. Greco, assistant professor of pharmacy, who received his Ph.D. degree from the University of Maryland in 1918 and taught at Temple University School of Pharmacy during the past year.

Frances I. Blair has been appointed an instructor in pharmacy at the College of Pharmacy, University of New Mexico in Albuquerque. She received her bachelor's and master's degrees at the Kansas University School of Pharmacy, where she was an instructor in pharmacy for three years.

Dr. Dwight L. Deardorff, formerly of the Mellon Institute, Pittsburgh, Pa., has been appointed associate professor of pharmacy at the University of Illinois. Dr. Deardorff has been associated with the Mellon Institute since 1912 and has served as a senior fellow of the U. S. Pharmacopœia Revision Committee in the field of analytical research since 1947.

Dr. John B. Bruce has accepted the position as assistant professor of pharmaceutical chemistry at the Oklahoma University School of Pharmacy at Norman. Dr. Bruce received his Ph.D. from the University of Colorado College of Pharmacy in 1949 and his A.B. from the University of Kansas in 1926.

Henry W. Phelps, a graduate student at the University of Oklahoma School of Pharmacy, received a letter of commendation from L. F. Reifsnider, Commandant, Eighth Naval District, in which he was commended for "initiative, alertness and resourcefulness displayed in giving timely warning of the approach of the tornado, which enabled personnel in the vicinity to take cover in the Naval Reserve Training Center (Norman, Okla.), as well as organizing searching parties and establishing a first aid station prior to the arrival of other relief forces."

Dr. Charles A. Reed has been appointed an assistant professor of zoology at the University of Illinois College of Pharmacy. A native of Portland, Ore., Dr. Reed received his B.Sc. from the University of Oregon and a Ph.D. in zoology from the University of California. He has taught at the University of California, Reed College, University of Oregon, and for the past year at the University of Arizona.

Dr. J. M. Turner, for the past three years a research assistant in the Department of Applied Physiology at Yale University, will conduct the physiology and pharmacology courses at the University of Connecticut College of Pharmacy. Dr. Turner received both his bachelor's degree and doctorate at Yale.

Tau Phi Sigma sorority of the University of Connecticut College of Pharmacy was formally installed as a chapter of the national pharmaceutical sorority, Lambda Kappa Sigma, on September 16.

Robert C. Wilson, dean emeritus of the University of Georgia School of Pharmacy will be visiting lecturer in pharmacy at Southwestern State College, Weatherford, Okla., for the current academic year. He will teach drugstore management, pharmaceutical law, and arithmetic.

Five new appointments have been announced to Georgia's School of Pharmacy staff. B. M. Gilbert, a Georgia alumnus and a retail pharmacist for more than 30 years, will teach dispensing and drugstore management. Edward H. Grinnell, who received his Master's degree from the University of Colorado, will teach pharmaceutical arithmetic and assist in the dispensing and organic chemistry laboratories. Robert Johnson, an instructor for the past several years in the chemistry department of the University, has transferred to the School of Pharmacy and will teach pharmaceutical inorganic chemistry and pharmaceutical arithmetic. Frank Dobbs, a 1949 graduate, will be a part-time instructor in pharmacognosy. Dr. John Stegeman, who graduated from the University of Georgia in 1941 and received his M.D. from Emory in 1915, is to be a part-time instructor in pharmacology.

The Heinz Apothecary scholarship has been awarded to Benjamin Paul Harrison of Salt Lake City, Utah, an outstanding student in pharmacy at the University of Utah.

The Borden award of \$300, presented to the eligible pharmacy student with the highest scholastic average in all college work preceding his senior year in the College of Pharmacy, Ohio State University, went to Alvin S. Segel of Cleveland Heights, Ohio.

Cal Eugene Christensen of Mt. Pleasant, Utah, was the recipient of the Haack Laboratory (of Portland, Ore.) Scholarship for the current year. The award is made annually to the outstanding

sophomore pharmacy student at the University of Utah.

Dr. James C. Munch of the faculty of Temple University School of Pharmacy, recently completed a 4,000-mile airplane trip to Puerto Rico, the Virgin Islands and Cuba. The primary purpose of Mr. Munch's trip was to explore the possibilities of growing vegetable drugs in Puerto Rico.

ASSOCIATIONS

A refresher clinic in modern prescription practice was held in conjunction with the 76th annual meeting of the New Hampshire Pharmaceutical Association on September 11 at Manchester, N. H. Leslie M. Ohmart and Mitchell J. Stoklosa, of the Massachusetts College of Pharmacy, Boston, were in charge of the clinic presentation. Speakers at the meeting included James F. Hoge of New York City, counsel for the American Foundation for Pharmaceutical Education, and Bert R. Mull of Eli Lilly and Co., Indianapolis, Ind.

A pharmacy seminar, the first of its kind for Georgia, was held at the University of Georgia, October 13 and 14. The Georgia Pharmaceutical Association is cooperating with the University to make the seminar an annual event. The program included discussions on better management, new drugs, State and Federal laws which affect the pharmacist, and professional relations between the pharmacist and the physician.

The 82nd annual convention of the Maine Pharmaceutical Association was held in Poland Spring, September 18 to 20. Speakers included Dr. Glenn L. Jenkins, A. Ph. A. President and dean of Purdue University School of Pharmacy; John A. MacCartney, manager of the trade relations department, Parke, Davis & Co.; and Dr. William Hold, widely known Maine physician. U. S. Senator Margaret Chase Smith was presented a plaque by the Association in appreciation of her efforts in behalf of pharmacy.

MANUFACTURERS

George S. Squibb, great grandson of the company's founder, has been elected secretary of E. R. Squibb & Sons, New York City, and Roland J. Dahl, vice-president in charge of research and development, has been elected a director of the corporation. Dr. Lawrence B. Hobson has been named associate medical director for Squibb. Dr. Hobson is widely known for his studies in chemotherapy, particularly with the newer antibiotics and in the field of tuberculosis.

During the first half of 1949, Smith, Kline & French Laboratories of Philadelphia have awarded 55 grants totaling \$133,726 to support medical research. Two traveling fellowships, established for the purpose of encouraging post-doctorate study

and investigation in the fields of physiology and pharmacology, have been awarded to Edward B. Ferguson, Jr., M.D., of Tulane University, and Charles J. Kensler, Ph.D., of Cornell University, both of whom will study in England for a year.

The annual Ciba Award for outstanding work in clinical endocrinology has been awarded this year to Dr. George Sayers, who developed a new and sensitive method for the assay of the adrenocorticotrophic hormone of the anterior pituitary gland. The interrelation of the pituitary and the adrenal cortex, and the response of this hormonal system to a variety of stimuli are better understood and can be better studied as a result of his investigations.

Schenley Laboratories, Inc., of New York, donated 960,000,000 units of penicillin to the American Legion during the recent Legion convention at Philadelphia. The penicillin will be distributed by the Legion's medical advisory board to needy veterans and their dependents.

Dr. R. J. Pauly, recently named assistant director of pharmaceutical research of the Sterling-Winthrop Research Institute, Rensselaer, N. Y., has been decorated by the Lebanese government as a "Chevalier de L'Order du Cedre." Prior to joining the Institute on August 1, Dr. Pauly was director of the School of Pharmacy of the American University of Beirut, Lebanon.

Sharp & Dohme, Inc., Philadelphia, has announced the award of research grants to: Dr. Bacon Chow for a study on vitamin B₁₂ being conducted at Johns Hopkins University, Baltimore; Dr. Martin M. Fisher, Brooklyn, N. Y., to assist in his clinical research on Depropanex, a deproteinized pancreatic extract; Dr. Max N. Huffman, Southwestern Medical School, Dallas, Tex., for the further development and testing of compounds believed to be active against tubercle bacillus; and asthma physiological fund to support a study on inhalation therapy under the direction of Dr. Alvan L. Barach. A renewal grant has been awarded to Dr. J. Eugene Ruben, chief of anesthesia, Philadelphia General Hospital, to enable him to complete investigations on Cyclaine, a new anesthetic.

Kenneth F. Valentine, president of the Pitman-Moore Division of Allied Laboratories, Inc., Indianapolis, Ind., has been elected vice-president of the parent organization. In addition to his new duties he will continue to serve in his present capacity with Pitman-Moore.

The name of the New England Alcohol Company of Everett, Mass., a partially-owned subsidiary of Monsanto Chemical Co., has been changed to Nealco-Monsanto Co.

To avoid possible name conflict, the Cabot Chemical Co. has changed its name to Coe Chemical Co. A pilot plant and research staff have been set up in Los Angeles.

BOOK REVIEWS

BLAKISTON'S NEW GOULD MEDICAL DICTIONARY

The *Blakiston's New Gould Medical Dictionary* is said to be the first completely new unabridged dictionary published since 1890, and the first of its kind to encompass the techniques of modern lexicography.

The new dictionary is a modern, comprehensive compilation of the terms used in all branches of medicine and allied sciences, including medical physics and chemistry, dentistry, pharmacy, nursing, veterinary medicine, zoology, and botany, as well as medicolegal terms.

Designed from the beginning as an entirely new and different publication and not merely a revision of the *Gould Medical Dictionary*, the editors included Harold Wellington Jones, M.D., Normand L. Hoerr, M.D., and Arthur Osol, Ph.D., with a pharmaceutical background, as well as an editorial board and staff of more than 100 contributors. Thousands of new entries from all branches of medicine and allied sciences are included. The dictionary is unique in its adoption of a simple system of phonetic respelling as an aid to pronunciation.

Much of the illustrative material is entirely new and in full color, and for the first time, the tables of vitamins, enzymes, etc., are in a section of their own. In all, there are 252 illustrations, with 129 of them in full color.

The dictionary will be particularly valuable to pharmacists. In the field of pharmacology, for example, the pharmacist will find listed the drugs described in the U. S. Pharmacopœia, 13th Revision; the National Formulary, 8th Edition; and *New and Nonofficial Remedies* (1948), as well as the more important drugs included in the U. S. Dispensatory, 21th Edition, and medicinals bearing proprietary names.

BLAKISTON'S NEW GOULD MEDICAL DICTIONARY, First Edition. Edited by Harold Wellington Jones, M.D.; Normand L. Hoerr, M.D.; and Arthur Osol, Ph.D., in cooperation with an editorial board and 80 contributors. *The Blakiston Co.*, Philadelphia, Pa., 1949; XXVIII + 1294 pp., 17 × 25 cm., 252 illus., \$8.50.

A. M. A. ISSUES 1949 EDITION OF N. N. R.

The 1949 issue of *New and Nonofficial Remedies* which recently came off the press follows substantially the pattern of the previous edition. For a more critical review of certain features of the 1948 edition of this useful handbook see *THIS JOURNAL*, *Sci. Ed.*, 33, 175 (1949).

There are approximately 75 new additions to this issue but most of them are new dosage forms and products which are already known but have just received Council acceptance. In some of these latter instances new brand names are involved. One of the interesting new additions is starch dusting powder, which has been specially prepared to replace talc in the dusting of rubber gloves, etc. in surgery. It has been known for some time that talc dislodged from the surgeon's gloves into a wound is capable of forming foci of irritation which may cause considerable difficulties. The specially treated starch, however, is capable of being absorbed ultimately so that this irritation does not arise.

Dihydrocodeinone bitartrate is a newly admitted codeine derivative which is said to be more active on a weight basis, but is also more addictive. Its use is primarily as an antitussive.

Theophylline sodium glycenate is a new form of theophylline and is used for the same purpose.

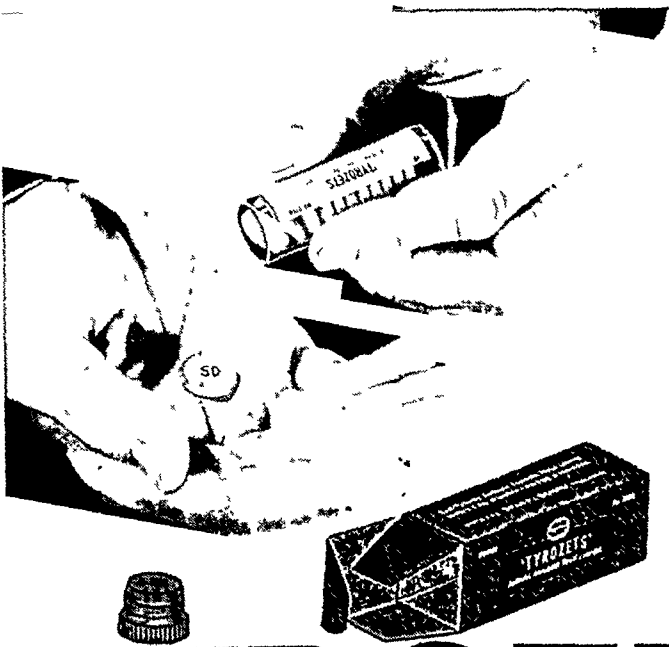
Two new antihistaminic agents have been added, namely, methapyrilene (Thenylene) hydrochloride and thonzylamine (Neohetramine) hydrochloride.

Methionine, a sulphur-containing amino acid, is recognized for the first time. However, it is acknowledged that its usefulness is still not completely established and that it has been admitted largely for experimental purposes.

Promesthrol dipropionate is a new synthetic estrogenic substance. Lipo-adrenal cortex, an oily preparation of the active constituent of the adrenal cortex, is available for prolonged action. Several allergenic extracts and a number of sera and vaccines have been added also.

Undecylenic acid, zinc undecylenate and an ointment containing both constituents will be found in the new *New and Nonofficial Remedies*. Pharmacists will be interested in knowing that standards will be provided for undecylenic acid and its zinc salt, as well as an ointment containing them, in the 9th Edition of the National Formulary.

NEW AND NONOFFICIAL REMEDIES, 1949. Issued under the direction and supervision of Council on Pharmacy and Chemistry, American Medical Association—*J. B. Lippincott Co.*, Philadelphia, Pa., 1949—LI + 805 pp.—12 x 19 cm. Price \$3.00.



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you
plenty
of*

TYROZETS[®]

Antibiotic-Anesthetic Throat Lozenges

a prescription item at a prescription price!

TYROZETS SELL FAST, because TYROZETS work fast! Germ-killing *tyrothricin* and soothing *benzocaine* promptly relieve raw, sore throats. You'll find the prescription demand heavy, because TYROZETS are heavily detailed and sampled. Customers like TYROZETS' pleasant licorice taste and attractive pink color. Repeat orders grow rapidly, and the news of TYROZETS' quick, soothing action travels fast to make new sales!

Stock TYROZETS now for fall and winter. Be ready for the sore-throat season with TYROZETS, the unique lozenge that delivers 1 mg. of antibiotic *tyrothricin* and 5 mg. of soothing *benzocaine* directly to the site of pain and infection! Distinctive amber plastic vials of 12 lozenges: \$9 per dozen, list. Your profit is at least 33 $\frac{1}{3}$ %. Place your order now!

Sharp & Dohme, Philadelphia 1, Pa.



NVR

PRODUCTS RECENTLY ACCEPTED
BY THE A. M. A. COUNCIL ON
PHARMACY AND CHEMISTRY



Council descriptions of new drug products only are published regularly in THIS JOURNAL as they are accepted. Rules upon which the Council bases its action appeared in the July (7:320) 1946 issue, and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.

PLANTAGO OVATA CONCENTRATE.—Konsyl—Burton, Parsons & Co.—A preparation consisting principally of the separated outer mucilaginous layers of *Plantago ovata* seeds (blond psyllium).

Actions and Uses.—*Plantago ovata* concentrate may be used in cases of simple constipation due to lack of sufficient bulk in the stool. It produces no cathartic action and is, therefore, mainly useful as an aid in chronic constipation, of functional or neurogenic origin.

Dosage.—5 Gm. to 10 Gm. in a glass of water or milk, 3 times daily, usually before meals, is considered sufficient to promote evacuation of the bowel in most cases. It is important to drink the mixture before it thickens.

Tests and Standards.—

Plantago ovata concentrate is a cream-colored to brown, granular powder, practically odorless and tasteless. For tests and standards see *J. Am. Med. Assoc.*, 141: 134 (1949).

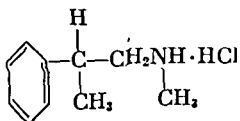
Burton, Parsons & Co., Washington 9, D. C.

Konsyl (Powder): 180-Gm. and 360-Gm. cans.

U. S. patent 1,975,731, U. S. trademark 313,620.

PHENYLPROPYLMETHYLAMINE HYDROCHLORIDE.—Vonedrine Hydrochloride—Merrell—*d,l*-1-Methylamino-2-phenylpropane hydrochloride— $C_{10}H_{15}N \cdot HCl$ —M. W. 185.70.—Phenylpropylmethylamine hydrochloride is made by adding phenylpropylmethylamine to an aqueous solution of hydrochloric acid and is not available in the dry state.

The structural formula of phenylpropylmethylamine hydrochloride may be represented as follows:



Actions and Uses.—Phenylpropylmethylamine hydrochloride, like the volatile base, acts chiefly

as a local vasoconstrictor. It is useful in the form of an isotonic solution for topical application to produce shrinking of the nasal mucosa. Its local effects are accompanied with minimal irritation, local tissue reaction or secondary congestion and little or no stimulation of the cardiovascular or central nervous systems. Although relatively nontoxic, ordinary precautions should be observed as for other sympathomimetic agents to avoid the possible untoward effects of overdosage.

Dosage.—Phenylpropylmethylamine hydrochloride is usually applied locally in a concentration of 2.8%, either as drops into the nose, as a nasal spray, nasal tampons, or by displacement followed by suction. Five to 10 drops in each nostril every 3 hours is usually sufficient to provide symptomatic relief of simple nasal congestion.

Phenylpropylmethylamine hydrochloride is incompatible with silver salts, tannates and picrates.

Tests and Standards.—

Phenylpropylmethylamine hydrochloride solution is clear, colorless and nearly odorless. It has a pH of 5.5 to 6.5. For tests and standards see *J. Am. Med. Assoc.*, 141: 133 (1949).

The Wm. S. Merrell Company, Cincinnati, Ohio.

Solution Vonedrine Hydrochloride, 2.8%: 30-cc. dropper bottles and 473-cc. bottles. Each 100 cc. contains 2.8 Gm. phenylpropylmethylamine hydrochloride, 0.02 Gm. of cetylpyridinium chloride, 0.25 Gm. chlorobutanol and aromatic oils in distilled water. The solution is isotonic, with a pH between 5.5 and 6.5.

U. S. trademark 106,970.

NEW GENERIC DESIGNATIONS

The Council on Pharmacy and Chemistry of the American Medical Association has voted to adopt generic names for the following products:

SN 13, 272. [8-(4-amino-1-methylbutylamino)-6-methoxyguinoline]. "Primaquine" has been adopted as the generic name.

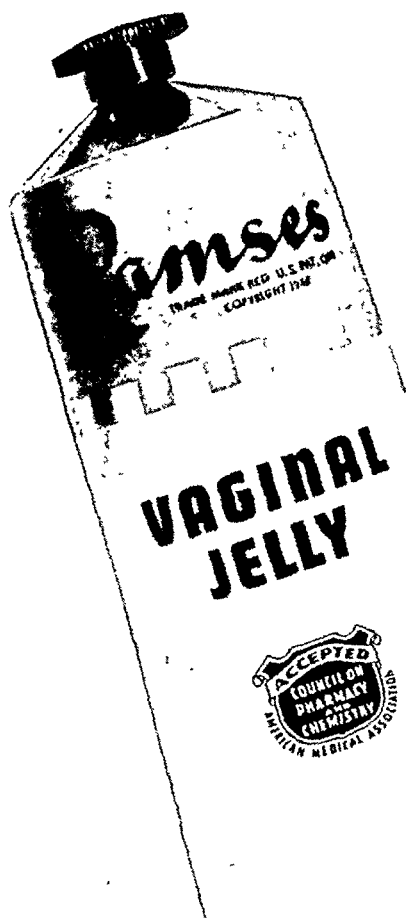
Di-methoxy-methyl-furano-chromone. "Visamin" has been adopted as the generic name.

Isuprel hydrochloride (Winthrop-Stearns, Inc.) and Isonorin sulfate (Carroll Dunham Smith). The hydrochloride and sulfate salts, respectively, of 1-(3',4'-dihydroxy-phenyl)-2-isopropylaminoethanol. "Isopropylarterenol hydrochloride" and "isopropylarterenol sulfate," respectively, have been adopted as the generic names.

The Council has recognized the protected designation "Thiomerin Sodium" for a brand of the disodium salt of N-(gamma-carboxy-methylmercaptomercuri-beta-methoxy) propyl camphoramic acid as presented by Campbell Products, Inc.

The Council also recognized the generic designation "mercaptomerin sodium" for this compound.

(Continued on Page 636)



gynecological division
JULIUS SCHMID, INC.
 423 West 55th St., New York 19, N. Y.
quality first since 1883

Active Ingredients. Dodecaethyleneglycol
 Monolaurate 5%; Boric Acid 1%; Alcohol 5%.

**FULFILLING EVERY
 REQUIREMENT OF EFFECTIVENESS
 AND PATIENT-ACCEPTANCE**

Ramses
TRADE MARK REG. U.S. PAT. OFF.
VAGINAL JELLY*

- 1** Immobilizes sperm in the fastest time recognized under the Brown and Gamble technique
- 2** Occludes the cervix for as long as 10 hours—*effective barrier action*
- 3** Nonirritating and nontoxic—*safe for continued use*
- 4** Crystal clear, nonstaining, delicately fragrant—*esthetically agreeable*
- 5** Will not liquefy at body temperature—*not excessively lubricating*

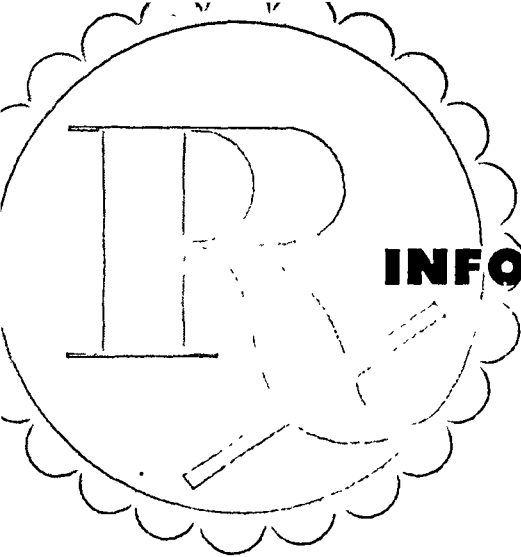


FOR ECONOMY TO YOUR PATIENTS
THE LARGE FIVE-OUNCE SIZE

5 BY WEIGHT
 J.L. MONOLAURATE 5%
 ACID 1%
 AL 5%
 PENDING
 GHT 5 OUNCES

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INFORMATION SERVICE

Members of the American Pharmaceutical Association are invited to submit their professional problems to the Journal, 2215 Constitution Ave., N. W., Washington 7, D. C., giving all pertinent details. Advisory service is provided by the A. Ph. A. library and technical staff and the Journal panel of technical consultants.

CHLOROQUINE

Please send me the name and address of the manufacturer of Chloroquine.—A. A., Kansas

Chloroquine is available under the trade name Aralen from Winthrop-Stearns, Inc., 170 Varick St., New York 13, N. Y. The diphosphate (62% base) is for oral use; the hydrochloride (89% base) for parenteral use, according to an article published in the June 10 issue of *Public Health Reports*, U. S. Public Health Service, Washington, D. C.

THEPHORIN

We would like the name of the manufacturer and some information about the following new antihistaminic drug: 2-methyl-9-phenyl-2,3,4,9-tetrahydro-1-pyridindene hydrogen tartrate.—E. A., Chile

This product is Thephorin, a brand of phenindamine manufactured by Hoffmann-LaRoche, Inc., Nutley 10, N. J.

The status of antihistamine preparations was discussed in an article entitled "Progress in Antihistamine Therapy" by William T. Strauss, which appeared in the December, 1948, issue of *THIS JOURNAL*.

SOURCE OF SULFAMYLON

Can you give us the source and some information on Sulfamylon?—O. H., Oregon

Sulfamylon is a recently developed sulfa drug and is available from Winthrop-Stearns, Inc., 170 Varick St., New York 13, N. Y. It is used in the treatment of otitis.

A reference to Sulfamylon appears on page 381 of the June, 1949, issue and page 584 of this issue of *THIS JOURNAL*.

SOLVARSIN AND NU-445

We have a request from Roumania for Solvarsin Bayer. Can you send us information as to source, use, etc.? Neither arspenamine nor Neo-salvarsan are the products desired.

Can you also send us information as to source, use, etc., of a new sulfa drug called Nu-445?—A. H., California

According to "Reportorium Pharmazeutischer Spezialparate, Sera und Impfstoffe" by Herbert Ludwig, Solvarsin has been withdrawn from the market, and we find no mention of the product in other sources.

NU-445 is the code number of a new sulfonamide (3,4-dimethyl-5-sulfanilamido-isoxazole) made by Hoffmann-LaRoche, Inc., Nutley 10, N. J. It is our understanding that a new drug application for this drug has been made effective in accordance with the U. S. Food, Drug and Cosmetic Act and that it has been placed on the market under the control name Gantrisin. You will find a rather extensive review of this drug in the March, 1949, issue of *The Modern Hospital*.

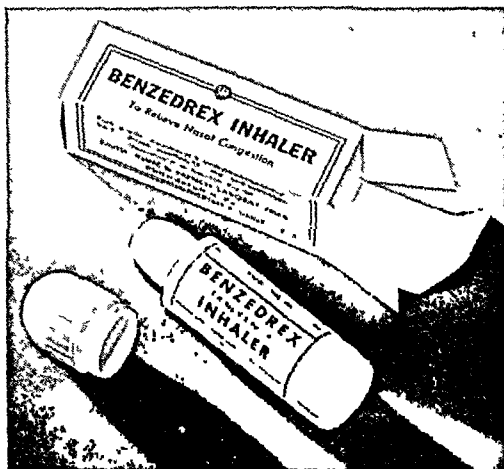
GOTTLIEB SOLUTIONS

A local dentist wishes me to prepare separate solutions of zinc chloride, silver nitrate, and potassium ferrocyanide and to include in each

(Continued on Page 632)

Announcing the NEW S.K.F. Inhaler!

BENZEDREX INHALER



So much better that
we have discontinued 'Benzedrine' Inhaler

'BENZEDREX' INHALER is such a superior product that we are actually withdrawing 'Benzedrine' Inhaler from the market.

The active ingredient of BENZEDREX INHALER is 1-cyclohexyl-2-methylaminopropane. It has exactly the same agreeable odor as Benzedrine*; gives even more effective shrinkage; and does NOT produce excitation or wakefulness.

When your customers ask you for a 'Benzedrine' Inhaler, just tell them that BENZEDREX INHALER is the new and improved product; and that it has replaced 'Benzedrine' Inhaler.

The minimum retail price of each BENZEDREX INHALER is 60¢; the list price, \$5.05 per dozen.

SMITH, KLINE & FRENCH LABORATORIES, PHILADELPHIA

*'Benzedrine' (racemic amphetamine, S.K.F.) and 'Benzedrex' T.M. Reg. U.S. Pat. Off.

ADR

DENTAL REMEDIES RECENTLY
ACCEPTED BY A. D. A. COUNCIL
ON DENTAL THERAPEUTICS



Admission to Accepted Dental Remedies means that a product and the methods by which it was marketed at the time of consideration were not found to be in violation of the published rules of the Council on Dental Therapeutics. A summary of the rules appeared in This Journal, 7:153 (April), 1946. Accepted products are reconsidered periodically.

TOOTH POWDERS LICENSED BY THE UNIVERSITY OF ILLINOIS FOUNDATION

The ammoniated tooth powders marketed under license from the University of Illinois Foundation contain urea (carbamide), 3 per cent; dibasic ammonium phosphate, 5 per cent; bentonite, 5 per cent; calcium carbonate and other abrasives commonly used in dentifrices, about 85 per cent; flavors, and detergents. Various detergents are employed, such as sodium alkyl sulfate, sodium alkyl sulfoacetate and sulfocolaurate. The licensed brands include Amurol, Colgate, Craig-Martin, Dy-Basik, Ingram, Kolynos, Dr. Lyon's, McKesson's, Orlis, Peb-Ammo, Pepsodent and Sparkle.

The results of preliminary bacteriologic and chemical studies indicate that the use of such products may help to reduce the incidence of dental caries.¹

A two-year controlled clinical investigation of a tooth powder containing 3 per cent of urea and 5 per cent of dibasic ammonium phosphate, conducted by the University of Illinois and the Illinois State Health Department, will be completed during 1950.² The clinical investigation has not progressed far enough to show whether the incidence of dental caries will be lowered by the use of such a dentifrice. All dentifrices marketed under license from the University of Illinois will be re-evaluated by the Council at the completion of the clinical investigation which is now in progress.

The Council on Dental Therapeutics has given temporary and tentative recognition to those ammoniated dentifrices which conform to its rules.³ A list of such dentifrices will be sent without charge upon request.

¹ "Developments in the Use of Ammonia and Al Surg., Oral Med. & Oral

² "Studied in Illinois (News of Dentistry)," J. A. D. A., 35:1894 (Dec. 15), 1947.

³ Council on Dental Therapeutics, American Dental Association, Report of the Annual Meeting of the Council on Dental Therapeutics. J. A. D. A., 37:1110 (July), 1948.

PREScription INFORMATION SERVICE

(Continued from Page 630)

substance a wetting agent. Can you advise us to the type and the percentage of the wetting agent to use?—H. K., New York

According to the January, 1949, issue of the *Journal of the American Dental Association*, these preparations are commonly known as the Gottlieb solutions and are used in the so-called impregnation technique for prevention of dental caries. It is our understanding that 1% of sodium lauryl sulfoacetate (Nacconol LAL) has been found to be a satisfactory wetting agent by those who advocate the treatment.

ATABRINE

Can you give me the proper dosage and describe the administration of Atabrine (quinacrine) as used in the treatment of Giardia lamblia? The manufacturer's catalogue I have does not list this information, neither does New and Nonofficial Remedies, 1949.—W. M., District of Columbia

Atabrine as used in the treatment of *Giardia lamblia* is usually administered orally, 0.2 or 0.3 Gm. in tablet or powder form, three times daily for five days. By following this course of treatment, the parasites generally disappear from infected individuals.

COOPER MORTAR AND PESTLE

Where can the new Cooper mortar and pestle be obtained?—H. D., Indiana

The Cooper mortar and pestle is obtainable from the Armstrong Cork Co., Lancaster, Pa.

A PEDICULOCIDE

Please outline the manner of preparation of the following formula which has been proposed as an effective pediculocide:

Thanite.....	25%
Mineral oil.....	25%
Water.....	44%
Gelatin.....	3%
Aerosol OT.....	3%

—E. S., Arizona

(Continued on Page 636)

There is no equivalent



Numerous clinical reports have shown that veratrum viride in *Craw Units** produces the most consistent, prolonged and effective fall in blood pressure in the treatment of hypertension of any drug previously used. Furthermore, the fall in blood pressure is physiologic . . . without compromise of circulation and without disrupting circulatory equilibrium.

These dramatic effects have been obtained only with whole-powdered veratrum viride Biologically Standardized in *Craw Units* (Irwin-Neisler). In no instance have unstandardized extracts or tinctures produced uniform therapeutic effects. There have been no clinical reports in the literature on the oral administration of chemically standardized preparations.

There is, therefore, no equivalent between veratrum viride Biologically Standardized in *Craw Units* and other preparations of veratrum viride. Make sure your prescription stocks include adequate supplies of these important Irwin-Neisler specialties containing veratrum viride in *Craw Units*:

*The *CRAW UNIT* is based on the amount of Reference Standard veratrum viride necessary to cause cardiac arrest in the test animal, *Daphnia Magna* . . . a procedure of biological standardization developed in the Irwin-Neisler Laboratories.

→ Vertavis®

Tablets . . . for severe, resistant essential hypertension.

A single agent containing whole-powdered veratrum viride, Biologically Standardized. Supplied in 10 *Craw Unit* or 5 *Craw Unit* potencies. VERTAVIS® with Phenobarbital is also available.

→ Veratrite®

Tablets . . . for mild and moderate essential hypertension.

An effective combination of veratrum viride 3 *Craw Units*, sodium nitrite 1 grain, and phenobarbital ¼ grain.

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Typical Days



FROM THE SECRETARY'S DIARY FOR
JULY AND AUGUST

ference with the S. G. himself on future plans for pharmacy in the Public Health Service and found him very sympathetic to the development of a strong pharmacy program in the Marine Hospitals and at other points within the U. S. P. H. S.

28th Most of this day meeting with the Committee on Public Relations going over plans for 1950 Pharmacy Week and the splendidly developing Heart Disease Education Program. These meetings assemble some fine public relations talent in the persons of Tom Rowe, Bert R. Mull, Walter M. Chase, and Jean Henderson. Every time this committee meets we realize how fortunate the A. Ph. A. is in being able to interest this fine group in its program.

29th Today testifying before the Senate Committee on Expenditures in the Executive Departments on President Truman's Reorganization Plan No. 1. Like President G. F. Zook of the American Council on Education, the American Public Health Association, the American Nurses Association, the American Legion, and other groups we favored raising the Federal Security Agency with its Food and Drug Administration, the Public Health Service, and the Office of Education, to cabinet rank. We also expressed the A. Ph. A.'s firm opposition to compulsory national health insurance.

30th The heat and Washington's humidity continue to torment us but it is still possible to spin along the open road and create a breeze to relieve the tension over the week-end even though everyone else has the same idea and the going is sometimes difficult.

AUGUST

1st Now beginning a complete survey of the A. Ph. A. Library facilities and equipment preparatory to making recommendations for expansion to the Council.

2nd Council Chairman Beal was among the visitors to A. Ph. A. Headquarters today which gave us an opportunity to review Council business and committee activities. At night to dinner with New York State Secretary Nicholas Gesoalde and Chairman Schaefer of the A. Ph. A. Committee on Legislation discussing problems dealing with interpretation of the Federal Food, Drug and Cosmetic Act.

3rd A morning session of the newly formed joint conference committee on Food, Drug and Cosmetic Law problems with Messrs. Gesoalde, Frates, and Waller representing N. A. R. D. and Messrs. Schaefer, Pritchard, and Fischelis representing A. Ph. A. and John Donaldson

(Continued on Page 636)

18th Much telephoning about the voluntary withdrawal of Presidon stocks by the manufacturer, because of isolated unfavorable clinical reactions. A splendid example of acceptance of professional responsibility on the part of Hoffmann-La Roche sparked by alert, professionally minded V.-P. Bob Hardt, with the Food and Drug Administration nodding approval. Late this evening at the office working on membership expansion plans.

19th Now conferring with A. C. S. staff writers who dedicated the front cover of *Chemical and Engineering News* to President Ernest Little as winner of the 1949 Remington honor medal. A fine gesture from a sister professional society. A chat with Senator Margaret Chase Smith about anti-vivisection legislation and apparently pressure on both sides of this controversial issue has been overdone. A cooling-off period seems to be indicated.

20th All this day busy with staff conferences looking toward development of new ideas for the JOURNAL, keeping up the beauty of the landscaping around our building, solving space problems for expanding services, and meeting new and greater demands on our library.

21st A luncheon conference with George Bugbee, executive director of the American Hospital Association at the Statler, reviewing in detail the aims and aspirations of hospital pharmacy and pharmacists, and the future of hospital pharmacy institutes.

23rd This day and yesterday completing the columns for the JOURNAL. Discussions with colleagues Powers and Darnell on the kind of papers pharmacists like to read and how the reading can be made easier. Also reviewing agenda for coming meeting of the Committee on Public Relations and plans for A. Ph. A. Laboratory.

26th Enjoyed report of Surgeon-General Scheele of U. S. P. H. S. to F. S. A. staff on recent activities of World Health Organization at Rome, from where he just returned. Later a con-

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TYPICAL DAYS

(Continued from Page 634)

representing National Association of Chain Drug Stores. After luncheon to the Food and Drug Administration for a conference of the joint committee with Commissioner Dunbar and staff. Much clearing of the atmosphere and a meeting of minds on many of the perplexing problems dealing with prescription renewal under the terms of the law.

5th Now working on the minutes and press release of the joint conference with the Food and Drug Administration and conferring by telephone with John Dargavel on the results of the conference. Later a meeting with Dr. Kahoe of J. B. Lippincott and Company who publish many of Pharmacy's important texts and reference works.

6th By automobile to Fredericksburg, Virginia, to participate in a meeting of the Board of Directors of Friends of Historical Pharmacy called to decide some construction problems. Also a visit to Kenmore, the home of Washington's sister, which has been restored most beautifully. Finally a tour about Fredericksburg with a schoolboy guide who has certainly learned the points of interest of his native city and knows how to expound them.

8th Continuation of the library survey reveals its wide extent of use by government departments and private agencies in Washington and elsewhere. Numerous conferences with committee chairmen by telephone and otherwise reveal A. Ph. A. activities well under way for the coming fall meetings of branches and related organizations.

10th A morning spent with the fire marshal going over the hazards within our building and taking corrective steps to guard against possible emergencies. At lunch with Dr. Walter Clark, Director of the American Social Hygiene Association, laying plans for Social Hygiene Day and other activities of the joint committee of our two associations. In the afternoon a delightful visit with Dr. Zayas-Bazan, Secretary of the Pan American Congress on Pharmacy who is a visitor in Washington and will review with Dr. Powers and the writer the proposed constitution for a permanent Pan American organization of pharmacists.

11th Glad to welcome N. A. B. P. Vice-President Franzoni and hear at first hand about the A. Ph. A.'s mission to Japan. Apparently, there was much of interest to be seen pharmaceutically and otherwise in the Far East.

PRESCRIPTION INFORMATION SERVICE

(Continued from Page 632)

According to information received from a reliable source, the following method may be used to make up the mayonnaise-type Thanite solution:

The water should first be heated to 60° C. and the gelatin and Aerosol OT dissolved in it. While this mixture is still 60° C., it is added with vigorous stirring to a solution of the Thanite and mineral oil and allowed to cool. It is important that the stirring be continued until the mixture has cooled to room temperature. For the treatment of pediculosis, the resulting mayonnaise-type emulsion is diluted with water to a Thanite content of 5%. The diluted emulsion is stable and may be stored for considerable periods without change.

NEW AND NONOFFICIAL REMEDIES

(Continued from Page 628)

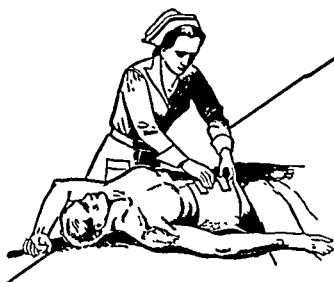
The New and Nonofficial Remedies monograph for Metrazol has since its acceptance carried as a synonym the chemical name pentamethylenetetrazol. In accordance with its policy of adopting briefer generic terms suitable for use in prescriptions, the Council after extended consideration voted to recognize the term "pentylene-tetrazole" as the generic name for this drug.

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de Angelo, A. Jerry, Los Angeles
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Mays, Lee R., Oklahoma City
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Davis, B. C., Portland
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Jackson, Geo. H., Drain
McClelland, Thomas E., Forest Grove
McGrath, Kenneth L., Woodburn
Morgan, A. Dee, Portland
Nance, R. F., Vernonia
Nolan, Walter C., Portland
Ray, Robert L., Portland
Robinson, H. D., Oregon City

Vaupel, Vance V., Klamath Falls
Wilson, Ray E., Salem
Witherspoon, Alex C., Portland
Yeo, Ernest E., Gladstone

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Pettis, Richard H., Clairton, Pa.
Stolz, Joseph, Cincinnati, Ohio, May 1, 1949

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ORIGIN OF SHOW GLOBES

(Continued from Page 606)

originated and gradually developed into a sign of pharmacy is proved by the fact that it remained restricted to the Anglo-Saxon world.

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Vitamin B₁₂ for Pernicious Anemia

Spinal cord degeneration, which is one of the most sinister complications of pernicious anemia, can be reversed if treatment with vitamin B₁₂ and exercises is begun early enough, say three doctors from the Mayo Clinic, Rochester, Minn.

"Our study indicates that degeneration of the spinal cord associated with pernicious anemia is reversible if intensive treatment is instituted early," Drs. Byron E. Hall, Frank H. Krusen, and Henry W. Woltman write in the September 24 issue of the *Journal of the American Medical Association*.

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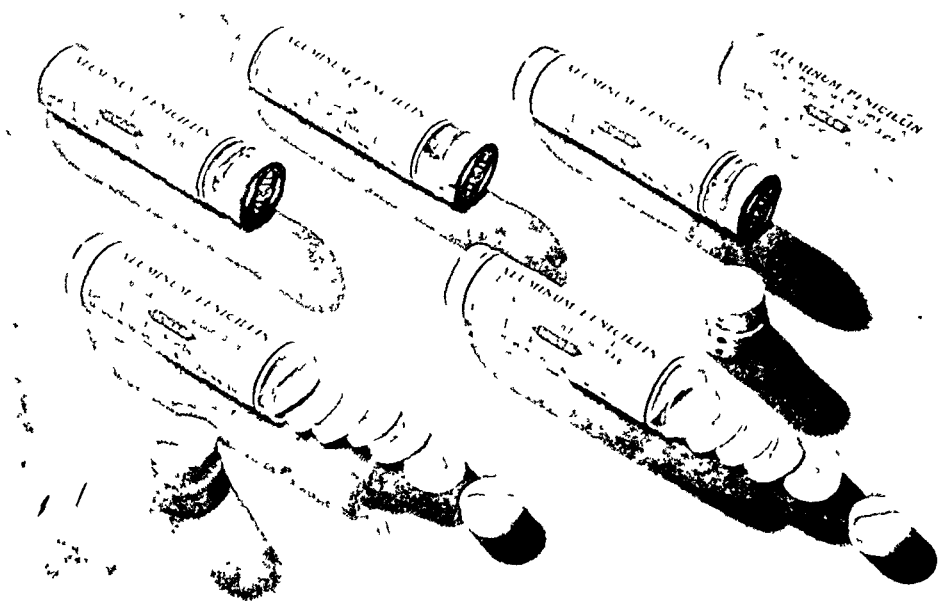
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